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COAL AGE

The World's Accepted Authority on Coal

McGraw-Hill Publishing Company, Inc.

September 9, 1925

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COAL AGE

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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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Model Mine Number

This issue is almost wholly devoted to a description of New Orient, and the plant is well worthy of so lengthy a review, having set many records and established many standards. Are they worthy of being followed? Well, all that can be said is that the company that has this mine in operation is making them a model for changes in its other plants. Its radical departures are so satisfactory that it deems it wise to copy them.

"Easy Does It"

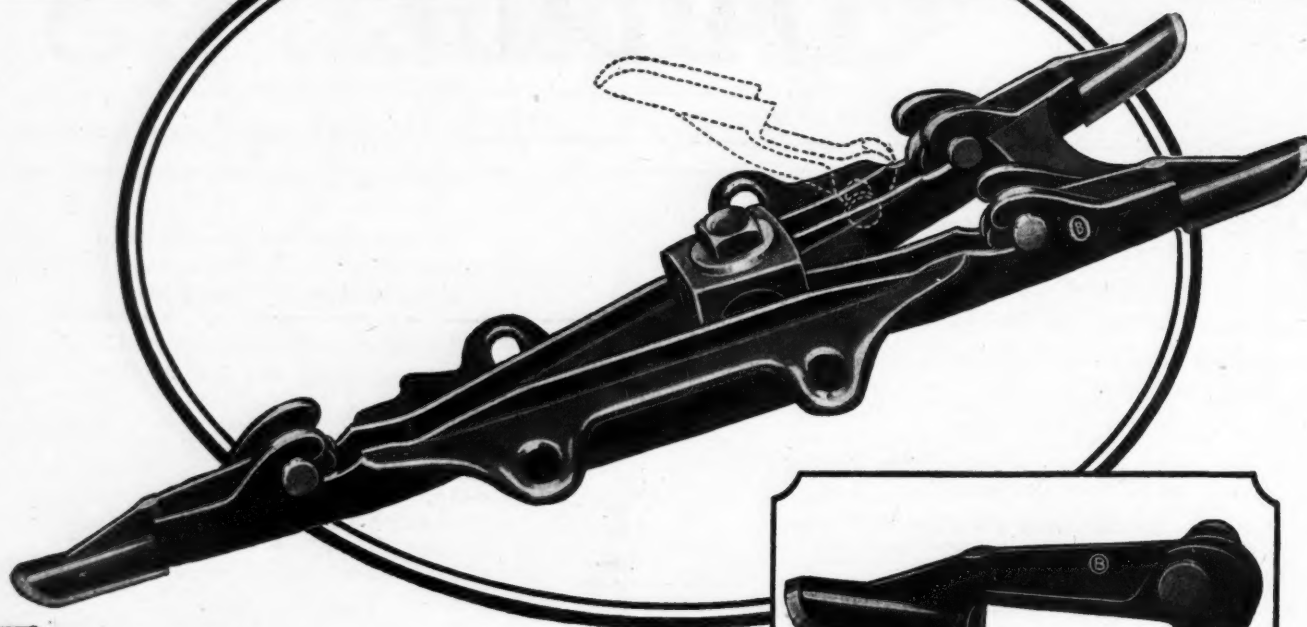
New Orient is an example of the easy way of doing things. The difficult way is to build the plant without much planning, accepting make-shifts, and then trying ever after to keep going despite them. Some people put in their time planning how to circumvent the exigencies that need never have been faced had initial forethought and provision been given instead of afterthought and tardy effort.

Bad grades and derailments, faulty shaft bottoms, hoists that must be driven to the limit to meet mine capacity call for active, daily and nightly labor, whereas preliminary forethought eliminates these difficulties. In many instances by faulty preparation we make our own problems. A little run before the jump carries the athlete easily over the water hazard, but those who wait till they reach the brink find themselves unable to gain the other side.

Another mine well planned, this one by R. M. Magraw, is the King mine in Utah to be described next week. The present management by equally prudent foresight is getting splendid results in its operation. It is a pleasure to present such examples of mining to our readers.

Coal Age, next week, also gives A. C. Fieldner's comments on the possibilities of growth or decline in the coal business—as they appeal to the chemist and student of natural resources. Mr. Fieldner's summary is good, but it does not cover the increasing demands of metallurgy for coal or the natural growth of the power industry with new demands for refrigeration and other purposes.

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The true measure is in life up on the trolley wire — in the number of trolley wheel passes before the pan wears out. Add to the purchase price the labor expense of installation. Then figure the cost per month, or per thousand wheel passes, and make your frog comparisons on the basis of these figures.

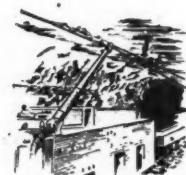
Try an O-B Type D Flecto Iron Frog where haulage is heaviest and compare it on this basis. It will cost you less in the long run. Then, in low total cost, you will get true frog economy. Then, you will realize what satisfactory frog performance hundreds of mines have experienced.

Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg. Co., Limited
Niagara Falls, Canada

1934



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COAL AGE

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. Dawson Hall
Engineering Editor

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Number 11

New Orient

THIS IS THE NEW ORIENT number of *Coal Age* and the sixth in the series of Annual Model Mine Numbers inaugurated in 1921 with the issue describing the Springdale plant of the West Penn Power Co. For the present, New Orient is the last word in an industry in which constant improvement calls continuously for betterment. Unlike the Springdale and the Lynch mines, New Orient is strictly a commercial operation and its success must be won in a competitive market in which internal strife is bitter and external pressure unrelenting.

New Orient is designed to do big things in a quiet way. The absence of rush in attaining record tonnages is, perhaps, the most impressive feature in the new operation. The management knows that undue speeding up is a fruitful source of accident. As far as safety devices and a careful planning can overcome man's gambling with his own life and the dangers of the unknown, New Orient has been protected. Striking proof of this was given a year ago, when rock-dusting turned what might have been a catastrophe into a minor accident.

New Orient holds undisputed possession to the title of the world's largest bituminous mine. Selling the output of that mine becomes no less a part of the story than the description of the engineering features which make economic operation physically possible. So the New Orient Number is broader in scope than its predecessors because it also covers the highlights of the merchandising program of the producing company.

New Orient is a well-rounded operation. *Coal Age* has endeavored to make its story equally well-rounded in the hope that the presentation will be a spur to further development along modern lines in the coal mining industry.

Brawn at the Dump

TO PUT A THOUSAND tons over the coal dump was hard work for four of the huskiest men at any mine in the good old days. It was inspiring to watch the brawny fellows at their jobs. They surely earned their pay. They did a day's labor; but as it is viewed today they did not do a day's work, using that word in the sense of accomplishment.

Today in the period of labor-easing a dumper may do a day's work but hardly does a day's labor. Human muscle stands aside for machinery. At New Orient the work of handling the big dumps is the part-time duty of one man, yet the day's dumping may mount to 12,000 tons or even more. The one man handles the trip feeder also, and the locomotive does not have to stay to feed the cars. Another man uncouples the empty cars into trips of twelve, which is not much of a task, and a third man runs the compressor.

Larger cars, two-car dumps, trip feeders, properly designed grades, swivel hitchings that permit the cars to be handled without uncoupling, all have a part in the efficiency of the work. The coal is discharged with less damage to the dump and to the cars, with fewer accidents, with less spillage and breakage of coal, with less loss of time for locomotives and other rolling stock and under cover also, away from sun and rain. Who shall say the industry does not progress?

Even where cars of small size must be used because of lesser coal thickness, large tonnages can be handled by like equipment and methods merely by increasing the number of cars placed in the rotary dump at any one time.

Lessons in Merchandising

AMBITIOUS SEEKERS after short-cuts to merchandising success will find the story of the sales program of the Chicago, Wilmington & Franklin Coal Co. disappointing reading. Here is no startling, ready-made formula for marketing. On the contrary, the principles underlying the distribution campaign of the management of New Orient and its associated mines are so simple that they should be fundamental to all merchandising efforts. A good product properly prepared, fair prices, controlled distribution and a service which protects the buyer as well as the seller are the basic factors.

Something more than good intentions, however, is needed if sound principles are to be realized fully in actual practice. The difference between success and failure in industry not infrequently lies in the manner in which practical application is made of abstract ideals. The merchandising program laid down by the New Orient company is one to which the majority of reputable bituminous operators would unhesitatingly subscribe. The hitch comes in translating the statement of principles into effective action.

It is because this company and certain other outstanding successes in the field have not stopped with a statement of intention that they become worthy of flattering emulation. The Chicago, Wilmington & Franklin Coal Co. has established a definite place for itself and its output by individualizing its service and its coal and by making it possible for the retail distributor to co-operate with the producer in creating a consumer demand for that product. In other words, in a highly competitive market, this company is making its franchise a thing of real value to the retail distributor.

The merchandising record of the C., W. & F. in recent years emphasizes the value of controlled distribution. Without that the individualization of the coal which gives it a character in the eyes of the distributor and the consumer would not be possible. Neither would the direct contacts which mean so much in effective selling. The fact that the control of distribution also carries with it the control of price is not to be overlooked. Con-

trol of price and of distribution are the first steps in the stabilization which is the goal of every coal producer.

To many of the old-time operators who looked upon expenditures for publicity as thinly disguised charity, the sums annually appropriated by the New Orient management for advertising and other promotional activities would be staggering. These appropriations, however, require no justification. Modern business judges not by the amount spent, but on the returns received for the investment. Judged on that basis, the C., W. & F. Coal Co. has no occasion to apologize for what it has been doing in sales promotional work.

Equipment Tells

EVERYWHERE THROUGHOUT the mines of the United States, but particularly where competition is keen and the labor cost of producing coal is high, a marked trend is discernible toward mechanization. To perform mining processes a certain minimum of power is necessary. It takes a certain number of foot pounds of energy to lift a ton of coal over the side of a mine car. In even so simple a process as using a shovel a man is highly inefficient. Thus, with the ordinary coal scoop, more energy is expended by a shoveler in lifting his own body than in raising the coal loaded.

But if man is inefficient in performing this operation the shoveling machine is even less efficient. Thus, the coal loader, as applied at New Orient for example, is equipped with a 25 or 30 hp. motor whereas the work it performs theoretically requires only 3 or 4 hp. Nevertheless, in spite of this theoretical inefficiency, it is found advisable to employ the mechanical in preference to the human loader.

The reason for this is not far to find. Mechanical energy is cheap—phenomenally cheap—whereas the energy of human muscles never was more expensive. It is thus better economy to expend large amounts of mechanical power in performing some certain specific operation than to allow the miner to perform the same task. In other words: "It pays to mechanize."

Lubrication

NO DEVELOPMENT in machinery has attracted less attention than lubrication, yet perhaps the growth of this development is almost as important as any other. Scientific methods and media of lubrication arouse no great public enthusiasm such as has been awarded to those who have developed steam-engine practice, locomotive engineering, aviation, radio, undercutting and loading machinery yet just as much intelligence and inventiveness has been displayed and the subject of lubrication engineering is just as recondite as any other.

The processes of extraction, refinement and application have needed and have received just as much scientific elaboration as any other department of operation. Without good lubricants and proper means of applying them, many modern mechanical developments would not have been successful. Much money has been wasted by overlooking the advantages of a correct application of oils and greases. Unfortunately the science of lubrication is so little understood by laymen that the whole subject is regarded with some suspicion and not a little misapprehension. This is perhaps, however, only a logical outgrowth of the mystery with which some lubricant vendors once sought to enshroud their wares.

Ye Goode Olde Days

PERHAPS IT IS a characteristic trait of human nature to look backward and recall the past. Perhaps also it is a failing common to humanity that such retrospections are almost invariably pleasant. Just as distance frequently hides the squalor and ugliness of a view so the lapse of time effaces the hardships and backaches of days that are gone.

People are prone to recall the "good old days" and speak of them with an affection and reverence that might almost lead one to believe that the progress of the world has been retrograde during the past few decades. "The old oaken bucket" may have been more picturesque than the present-day spigot over the kitchen sink but it was likewise vastly less sanitary and less convenient. The stage coach and pony express may have held a world of romance but for accomplishing results they fell far behind the modern express train and the air mail. A man swinging a flail or wielding a hoe may constitute an excellent subject for an artist's genius but either operation was heavy, hard, back-breaking work and the results accomplished could in no sense compare with those yielded by a steam threshing machine or tractor.

Geniuses of the past century and particularly the latter half of it have directed their efforts not so much to perfecting or practicing the so-called fine arts as towards "harnessing the forces of nature in the service of man." In this effort they have been so successful (through the production and utilization of heat derived from burning fuels) that they have done more in half a century to level and obliterate the differences that once distinguished patrician from plebeian, master from slave, lord from serf and in later days rich from poor than had been accomplished in all preceding ages through which the world has passed. In other words the development and application of mechanical energy (including its transmission and utilization as electric current) has so cheapened the processes of manufacture, transportation and marketing that, so far as food, clothing, shelter and habits of life are concerned, small difference exists between rich and poor. In food, raiment and shelter class distinctions have today largely disappeared. The humble laborer today can easily afford food, clothing and housing to amply meet his need: the millionaire can buy little more.

And year by year this power—this effacer of class and caste—is being cheapened. In a modern power plant a kilowatt hour of energy can be produced with a pound of coal. High-tension transmission makes it possible to economically utilize this energy many weary miles from the point of its generation. Thus current produced at Grand Tower on the bank of the Mississippi mines coal at New Orient, two-thirds of the way across the State of Illinois.

In this country practically every profession, trade and calling, certainly every walk and condition of life, has felt the influence of cheap power. How much farther its influence can and will be carried only the future can disclose. Big units both for the production of fuel and for the generation of energy from it seem to be the order of the day. And although our present-day manner of living may lack much of the romantic glamor of the past, the cheap power derived from coal has doubtless done more to make human life worth the living than any other one thing with which the race of man has ever been blessed.



Men Who Produce New Orient's Big Tonnage

New Orient, Not Only World's Largest Mine but Exhibit Also of Modern Operating Methods

Tonnage Obtained by Letting Electric Power and Compressed Air Do the Work—Output Attained Without Hurry by Having All Parts Of the Operation Properly Co-ordinated as in a Vast Machine

By A. F. Brosky

Assistant Editor, *Coal Age*, Pittsburgh, Pa.

NEW ORIENT MINE of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill., is typical of modern business, that lays out a definite program and ploddingly plans its accomplishment, scheduling beforehand just what will be needed and then unerringly arriving at the goal sought. Not for one moment is reliance placed on bursts of enthusiastic effort consequent on the hope of breaking records. The output is inherent in the methods and plant; enthusiasm may make it exceed its proposed output, but the tonnage anticipated is not dependent on such uncertain grounds. Its production and its market are alike predicated on the equipment and methods which were planned to bring both and are

bringing them inevitably as a natural cause and effect.

Labor-easing machinery, diligently planned operation, equipment that will prepare a good article and one the market needs are the fundamentals of New Orient management. One is reminded at Orient of a Japanese visitor who clambered one morning up the side of a plane at one of our Western mines,—Black Hawk of the U. S. Fuel Co. by the way.

He met the general manager and began plying questions as to the output and the number of men employed, and noting that the plane was not running every few minutes and having seen no notable activity around the town of Hiawatha, he was disposed to question that any such output was attained or indeed attainable from

such an inadequate force of men. Just then the cars, large and menacing, rolled down the plane with a deafening roar, and as the manager and his visitor stepped to one side to let them pass the face of the Japanese broke into a half comprehending smile.

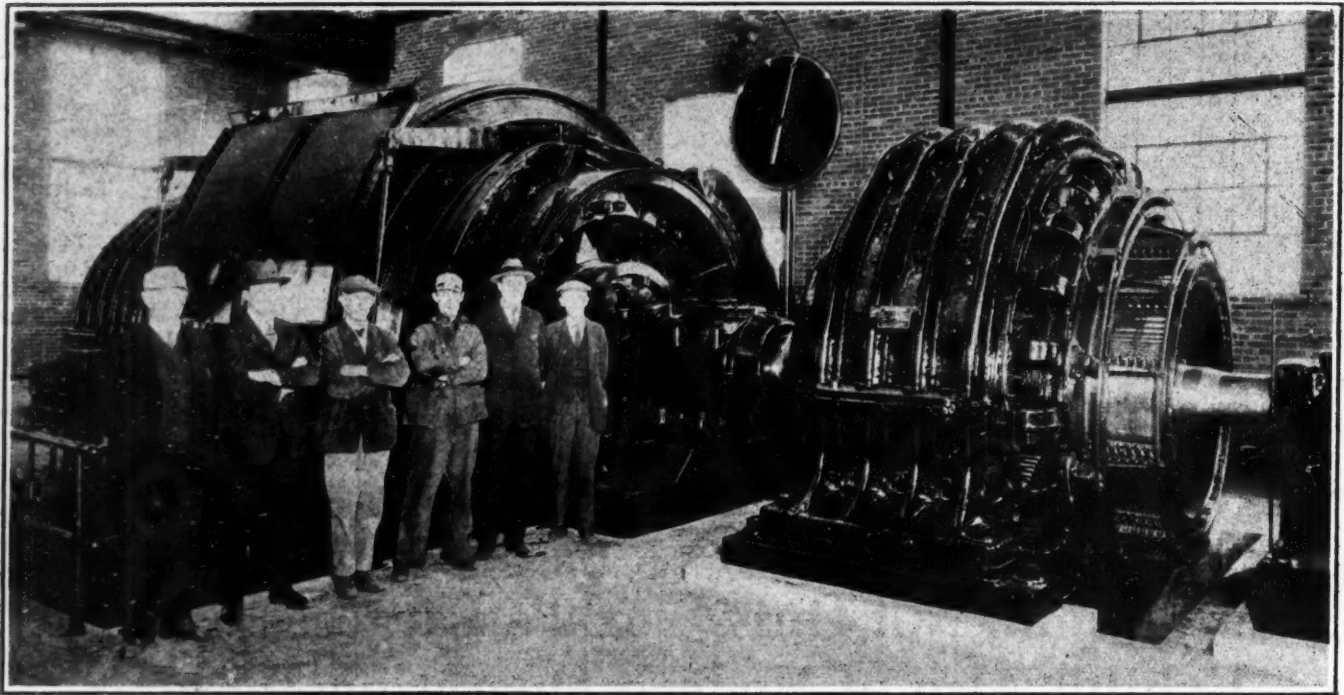
Here were no men visible but a large tonnage making



Eastern Part, New Orient Plant Seen from Main Shaft

In the foreground is the long conveyor leading from the auxiliary shaft to the main tipple. On this, coal is inspected that is thought likely to be found subject to dockage. In the rear is the auxiliary hoist with hoist house on left. In line with the big tank are the boiler room and washhouse. The three buildings on the left are the shops, storeroom and office. On the right or south side is the village of West Frankfort, and the big yards for empties and loads.

Headpiece—Left to right, front row: Walter Finney, face boss; William Knapp, face boss; George Pollock, mine manager; John Rodenbush, superintendent; Tom Daugherty, face boss; Nels Johnson, face boss; William Baker, motor boss; George Meagher, panel boss. Left to right, back row: A. E. Gilles, electrical engineer; Walter Nichols, safety-first man; J. T. Smith, face boss; George Joy, in charge of loading machines; M. L. Gallick, panel boss; William Crawford, face boss; Jake Rodenbush, face boss; Noral Starks, machine boss; Arthur Shafer, wire boss; Andy Leslie, top foreman.



Biggest Ward-Leonard Hoist Ever Built Raises 12,825 Tons in Eight Hours

A few years ago with slow hoisting speeds, a shaft was considered an undesirable way of reaching a coal bed, but the hoist engineers have rendered the shaft no longer a handicap even though modern

methods of hauling and handling coal from a drift mouth or slope have made the level or slightly inclined mine approach more efficient than ever before. The hoist at New Orient is driven by two direct-current

motors each of 2,000-hp. capacity. The flywheel, motor-generator set, furnishing currents to these motors is driven by a 2,200-hp. wound-rotor induction motor, the two generators being mounted on one shaft.

its own way, apparently, to the dump at high speed and at minimum of human effort. The marvel was explained. New Orient needs a similar explanation, though on examination it explains itself. The facilities are there. Except in the loading of coal in rooms there is no effort. The leashed forces of electricity—and compressed air—are doing the work. Men have stepped into the background. They control, they no longer do the work.

Nor is there complication in mechanical effort. Big elements handle big tonnages and do it with precision and automatism. A wealth of planning is hidden under those well-ordered processes and something too of a rebuke to those who would get large tonnages by a multiplication of small mines, gopher holes inefficiently equipped, inadequately supervised, negligently managed, sprawling over counties and even states, each producing a few hundred tons.

The Chicago, Wilmington & Franklin Coal Co., under

George B. Harrington, has in this one mine, with this unit equipment, provided a means of producing 3,600,000 tons yearly with steady operation. Without extraordinary effort it should be capable of producing 4,500,000 or even 5,400,000, tons every year. Unfortunately Illinois does not now have a market steady

enough to provide a continuous demand for such a tonnage which would in itself be the pride of many coal-mining fields and even states. The Chicago, Wilmington & Franklin Coal Co. has dared to think in large figures, to design in large units, and its success will soon be exceeding its estimates.

The New Orient mine is notable for its simplicity. The high daily output attained at this plant—eight, ten and twelve thousand tons—not to forget the record of 12,825 tons as of Dec. 15, 1925—are of course inspiring; but the ease with which these big tonnages are handled from the solid to railroad cars is the most striking characteristic of this



Some of the New Orient's Staff Officials

The man with one knee on the landing is Joseph Louis, general superintendent until his death, June 8 of this year. The men in the back, from left to right are: Bliss Wentworth, superintendent's clerk, L. D. Smith, vice-president in charge of operation and John Rodenbush, superintendent. On the left, in the front row, is O. G. Grimmert, chief clerk to general superintendent.

plant, which seems almost trouble- and delay-proof.

Of the multitude of visitors from near and far who have visited New Orient, many were in expectation of seeing a plant of intricate operation, where the wheels turn with great speed and where men are everywhere in pell-mell confusion. Instead they saw the simple, straight-line features of a smaller coal mine on a large scale, with such departures from common practice as are required to expedite the getting of a bigger output. They also saw methods of preparation which are exceeded in their completeness, effectiveness and economy of power at no other bituminous mine.

Coal is produced at this mine by methods, practices and management which simulate those of a modernized factory where materials are systematically routed in scheduled processes which convert them from a raw state to finished products. At New Orient, coal in the rough is loaded into mine cars and then transported and lifted with practically no delay to the preparation plant where it is "manufactured" into a number of products of a high quality standard. The underground workings are merely the source of the raw material. The preparation plant is the mill or factory in which the raw material is shaped into finished products. As a factory, the preparation plant works steadily throughout the eight hours of the day. That this is so can be judged by the fact that on the record day already mentioned lost time in hoisting and preparation totaled only 15 min.

The plant operates quietly and with comparatively few men. On the record day, with a total of 1,377 men employed including the night shift, the average output per man was 9.31 tons. Nor was this record run staged,

for on the day before and the day after the mine produced 11,278 and 9,350 tons respectively.

Ground was broken on April 21, 1921, the shafts were sunk and lined by the latter part of 1922, after which efforts were concentrated on the developing of entries. While the dumping and main hoisting equipment was being installed and during the time require to erect the preparation plant, development coal was hoisted in the auxiliary shaft and loaded over the auxiliary tippie.

The major equipment was put into operation on an operating basis at the beginning of 1925. In 1922, this mine was merely a hole in the ground and produced only 5,425 tons, which was increased to 203,700 tons in 1923, to

514,789 tons in 1924, and to 1,999,210 tons in 1925. How rapid was this change is indicated in the accompanying table.

DESIGNERS OF PLANT

George B. Harrington, president of the company, is to be complimented for his vision in conceiving this plant as a unit and afterwards determining its many features. He was ably assisted by Lawrence D. Smith, vice-president in charge of operation; the late Joseph Louis, general superintendent; Daniel J. Carroll, chief engineer, who had immediate charge of the details of this construction job and by the superintendents of all the company's other mines who, to quote Mr. Harrington, were frequently called in as a "jury" to pass on features of the planning.

The coal company is under the executive management of Stone & Webster, whose engineering department has designed and constructed many large public utility and other plants. Consultation with the Stone & Webster staff, particularly on electrical matters, was of great value.

Allen & Garcia, as consulting engineers, were closely associated with the job and not only were responsible for the working out of the drawings and details of many important features of the plant, but had general supervision of the erection of the tipples and rescreener.

The plant is now practically complete. John Rodenbush, superintendent, and his co-workers are to be commended for their zeal and enthusiasm in bringing production so rapidly to its present status and its continuance is thereby guaranteed.

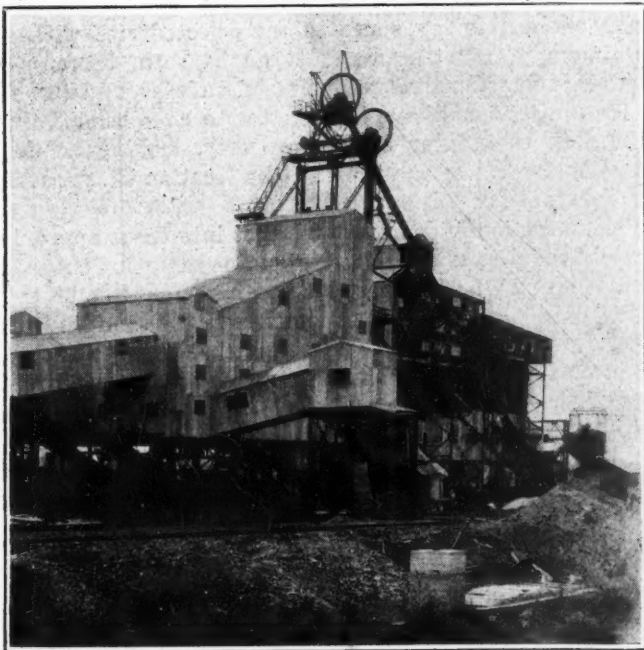
Those who were instrumental in the creation of New Orient have paid themselves the biggest compliment of all by achieving a plant which will do even more than that for which it was designed.

In the following pages are given the operating features of this plant and the results attained. Only certain parts of the plant are described, where such treatment is needed to clarify the operating details. The plant as a unit has already been described, issue of March 12, 1925, pp. 394 to 398, in an extract from a paper by Mr. Harrington entitled "New Orient an Unusual Coal Mine," which was presented before the American Institute of Mining & Metallurgical Engineers on Feb. 17, 1925.

MONTHLY AND AVERAGE DAILY OUTPUT OF NEW ORIENT DURING 1925

Month	Average Daily Output	Monthly Output
January.....	6,211	161,496
February.....	6,049	61,999
March.....	6,163	67,064
April.....	6,727	145,558
May.....	7,261	159,736
June.....	7,289	153,068
July.....	7,931	203,891
August.....	8,250	214,513
September.....	9,214	175,074
October.....	9,444	226,642
November.....	9,598	206,959
December.....	9,757	223,205

* Plant damaged by cyclone.



Main Tipple with Rescreener Under Construction

To the left is the conveyor from the auxiliary tippie. In the main tippie, the large sizes are prepared. In the rescreener, coal below 2 in. receives treatment.



New Orient's Mining Methods

**Each Main Entry Group Has Four Headings Constituting a Pair of Pairs—
Twenty-Two Loading Machines Used—Aircourse Rock-Dusted Before Track
Is Lifted—Barriers Lurk at Panel Entrances for Escaping Explosions**

MANY BIG MINES have been started with almost all the essentials for big tonnage carefully planned and provided. But the tonnage never came to the anticipated mark. There was but one flaw—development. The headings were worked out as fast as they were opened, and it was a continued race to maintain output. To increase that output seemed impossible, and in many cases the mines ran along for years without the desired output, and often the tonnage fell instead of rising. So it will be interesting to see how New Orient so speedily fell into stride, how it got the tonnage it wanted, how the headings were driven and the rooms necked for the rapid attainment of the desired output. For tonnage comes with planning. And New Orient must have found the plan. But before taking up the methods at this mine, a slight digression should be made.

New Orient is located in Franklin County, southern Illinois, in the midst of other big producers, many with capacities ranging from 5,000 to over 8,000 tons per day. To it has been assigned a rectangular area of 6,400 acres which is $2\frac{1}{2}$ miles wide east and west and 4 miles long north and south. The entire area is underlain by the No. 6 seam. A portion of the adjoining territory which is now in reserve no doubt will be added to this mine some day.

The shafts are sunk in the southeastern corner of the property, and on the outskirts of West Frankfort, a town of 18,000 people. The shafts are also only 6 miles south of Benton which has a population of about 7,200. A state concrete road which connects these two towns passes within a few feet of the mine. These

factors are stressed because they had an important bearing on the final selection of the plant site.

Many have wondered, why the corner of the property was selected for the location of the shafts. The answer lies in the accessibility of this point from the main sources of labor and the character of the terrain in other parts of the property. Most of the surface north of the shafts is low-lying and swampy, a condition which could have been remedied only by much filling. Furthermore, the four railroads which serve this mine were enabled to lay spurs to the selected site with a minimum of construction. It can be seen, therefore, that though from the standpoint of underground transportation it would have been better to have located the shafts in the center of the property, looking at the broader aspects of the problem the location chosen was by far the more desirable.

The mine is divided east and west into three approximately equal territories by two main groups of entries, one running due north from the main shaft and the other paralleling it half way from the western boundary of the property. Each of these main entry groups consists of four headings comprising a pair for the hauling of coal and another pair for air transmission. The two-way main haulage is an absolute necessity for the handling of the big output of this mine. In accordance with Illinois custom, the two airways comprise the main intake and the two haulage headings the main return of the area which they serve.

All the headings are driven 12 ft. wide and between each pair of headings is a 20-ft. pillar. The crosscuts between the pair are open and spaced at regular 60-ft. intervals. The pairs of haulways are separated from the pairs of airways by a 22-ft. pillar which is broken by crosscuts at intervals of about 500 ft. A 125-ft. barrier is left on either side of the main entries.

Cross entries are driven at intervals of 1,494 or

The headpiece shows a loading machine in a room neck at New Orient. Until now loading machines have been used almost entirely for entry work. The coal from crosscuts and room necks also is generally loaded by machine in those entries which are mechanically driven. Note how the rear conveyor is turned at an angle of 90 deg. to the main portion of the machine.

1,544 ft. depending on whether a 100- or 150-ft. barrier is left to protect them. These are driven in twos, 12 ft. wide on 32-ft. centers. Panels are formed by driving pairs of stub entries at intervals of 520 ft. These headings are 12 ft. wide and are located on 40-ft. centers. A panel consists of thirty-two rooms, sixteen on each side of the stub entries, which are mined to a width of 22 ft. and a depth of 250 ft. on 40-ft. centers. Barrier or 'fire' pillars of 20-ft. width are left on the sides, and one of 50-ft. width is left on the inside end of each panel. For obvious reasons great care is exercised not to allow rooms or stub entries to be driven through these barriers. Each cross entry accom-

modates six pairs of panels. It may be said here that the panel layout, with but a few exceptions, has not been given sufficient weight in the east. It has its disadvantage, of course, in limiting recovery; but even so, it offers such savings in ventilation for the life of the mine and provides such easy means for fighting a large fire or checking the propagation of a coal-dust explosion, as to commend it for most serious consideration. No doubt much of the success attained in Illinois in fighting big fires may be attributed to the use of panel layouts. It may be added that a long-face section could be confined within such barriers to form a true panel quite as readily as an area operated by the room-and-pillar method. Where, how-

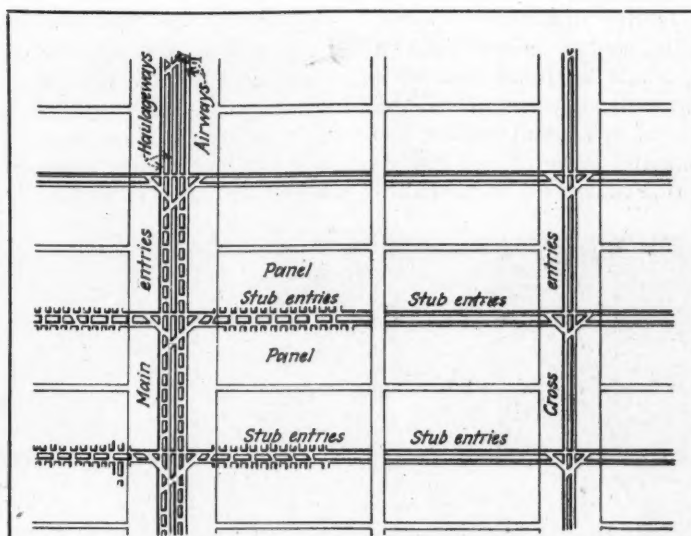


Fig. 1—Method of Developing New Orient

Big pillars are needed to protect airways, but no one desires to drive openings through them every 60 ft. Consequently, it has been arranged, where there are four entries, to drive them in pairs and only 20 ft. apart in the clear. A 20-ft. pillar is easily pierced every 60 ft. The central pillar is only 22 ft. wide but the side pillars are 125 ft. in width. That is placing the strength where it belongs, saving crosscut costs and leaving an almost unperforated pillar between roadway and airways. Only Illinois, so far, has learned the value of this procedure.

ever, long faces are operated the size of the barrier ought to be larger than that ordinarily used.

In New Orient, the No. 6 seam varies in thickness from 9 to 12 ft. Its only pronounced impurity is a clay parting, better known as 'blue band,' which has an average thickness of 1 in. and occurs about 2 ft. above the floor. The bottom for a depth of 3 ft. is of fireclay. Below this is a stratum of limestone. As the seam lies practically horizontal and as the surface is comparatively level, the thickness of the cover is uniformly about 500 ft. The measures which compose the cover are chiefly of shale. Those adjacent to the seam are broken down on coming into contact with air and display no great tendency to arch, for which reason some coal is left for roof protection. The practice is to take 7 ft. of the seam in entries and 8 ft. in rooms.

Rooms are necked as the stub entries are developed, but the rooms are not driven until the entries have reached their limits. Then as a general rule all the thirty-two rooms within a panel are driven up concurrently, the intention being to complete the driving of them before the panel takes on excessive weight. Unless the rooms are driven speedily, a few of them might be totally or partially blocked by premature falls of roof. In this event, the lost rooms could be and are frequently picked up by crosscutting through an adjoining room which is not thus affected, but this is not always possible. The roof shales fall freely to heights of 20 to 30 ft. above the coal. This action is followed at a somewhat later period by more extensive falls which often reach to the surface, despite the fact that much pillar coal is left when a section is abandoned. All in all, the roof is weak and easily broken.

By driving all rooms simultaneously, the operation is relatively well concentrated. A single panel provides work for two cutting machines and thirty-two loaders.

In the New Orient mine, the pillars are recovered by straight slabbing or by pocketing, and sometimes by a combination of these two schemes. Where conditions permit, the room is widened as it is driven, the additional width being taken after the first crosscut is passed. Thus some of the pillar coal is saved.

No. 6 seam has no regular system of cleavage. It possesses pronounced horizontal bedding planes but no cleats. These horizontal cleavages are due to layers of mother coal which in places are so thin that they may be compared to a film. However, here and there, the seam is broken by slip planes, the traces of which generally lie at an acute angle from



Fig. 2—Lumpy Coal Resulting from Well-Placed Shots

Where the face is not sheared room cuts are brought down by three shots. These consist of a tight center shot and two rib shots. The slabby shape of the larger lumps indicate the difficulty experienced in the shooting of this coal.

the vertical. These are in reality diminutive faults, the displacement of which is seldom more than a small fraction of an inch. Their surfaces are slick and are marked by thin white depositions of calcite. Unfortunately these slips are of too small extent, too irregular and too widely separated to be of any assistance in shooting. Chiefly for this reason all coal is hand-snubbed by a cut which is started at the face from below the blue band, which, as has been stated, is about 2 ft. above the bottom. The snubbing ends on the top of the kerf at a point about halfway between the face and the back of the cut.

Room coal is brought down by three shots, the center one being fired first. Holes of 2½-in. diameter are drilled for the reception of 1½-in. cartridges, of which three are used in the tight shot and two in each of the rib shots. In entries only two shots are used, the tight shot consisting of four cartridges and the "follow-up" of three. All shots are inspected and detonated by shotfirers immediately after the day shift.

Two shearing machines are being used with fair success for the preparation of such room cuts as are loaded out mechanically. The coal is sheared in the center and when thus cut only two shots are needed to bring it down. The shearing machines are not used in the entries.

Twenty-two loading machines are installed in the mine, and these are chiefly used in heading driving. To date, more than 125,000 lin.ft. of entry have been driven mechanically.

To provide a sufficient number of working places in a mine producing 10,000 to 12,000 tons daily, development must proceed at a rapid rate. During the earlier stages of underground development, by an agreement with the United Mine Workers, the loading machines were operated three shifts per day. Consequently, the rate of development by machine-loading methods was 50 per cent greater than by hand loading, where double shifting only is allowed.

At the time of my visit to the mine six loading machines were put to work in a concentration plan for working rooms. These machines were then loading an

average of 125 tons per shift each. Their output no doubt will be substantially increased as the men become more accustomed to the plan and learn the details of operation. Two types of loaders are used, both of which have long been in service. The company is installing more mechanical equipment of various makes in order to reduce the labor of coal extraction.

Miners work in twos both in room and entry places. Each pair is assigned two places, one of which is being prepared or is held in reserve while the other is being loaded out. This arrangement, incidentally, is typical of all mines in the field and is necessary because all cutting is done during the day shift. As all places are undercut to an average depth of about 6 ft., the 22-ft. rooms, where 8 ft. of the seam is taken, yield 45 to 50 tons per cut and the 12-ft.

entries where 7 ft. of the seam is taken yield about 18 tons per cut. The miner sets all posts and extends the track in his place by the use of slide rails. Most of the tracklaying and all the cross-bar erection are done by shiftmen. Generally speaking, no timbering is required in entries. In rooms two posts are set for each advance of one cut.

The track is laid in the center of the place and a post set on each side of it.

New Orient, of course, is thoroughly rock-dusted. By the careful maintaining of rock dust where needed, the danger of coal dust in this mine has been eliminated, as proved by an unfortunate explosion last winter which was checked by rock dust within a short distance of its origin. Not only are all haulways coated with rock dust, but the stretches of aircourse from crosscut to crosscut are also being thus treated before the track is torn up. The first

application of dust is of 3½ lb. per lin.ft. The quantity and the time for the application of additional dust are determined by the analyses of samples which are taken systematically.

Rock-dust shelves and troughs are maintained at strategic points close to the working places. The two

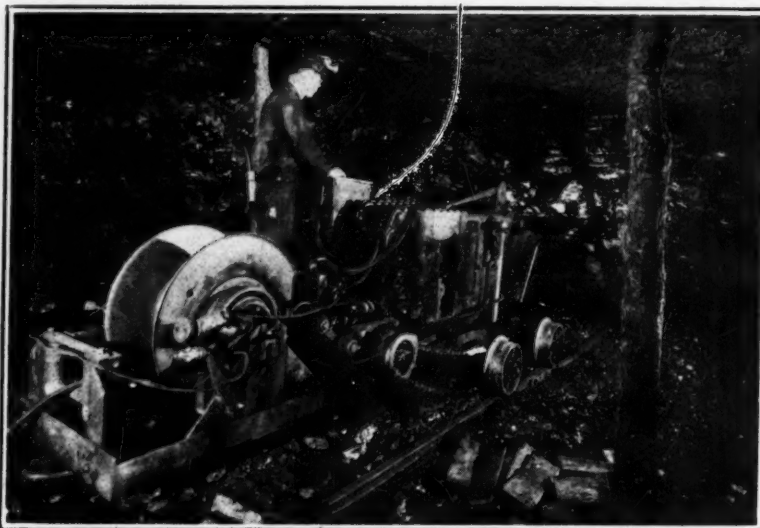


Fig. 3—Beginning a Shearing Cut in the Face of a Room

Two shearing machines are installed in this mine. These are used in connection with the preparation of room cuts which are loaded mechanically. A single center-shearing cut reduces the number of shots to a room cut from three to two.

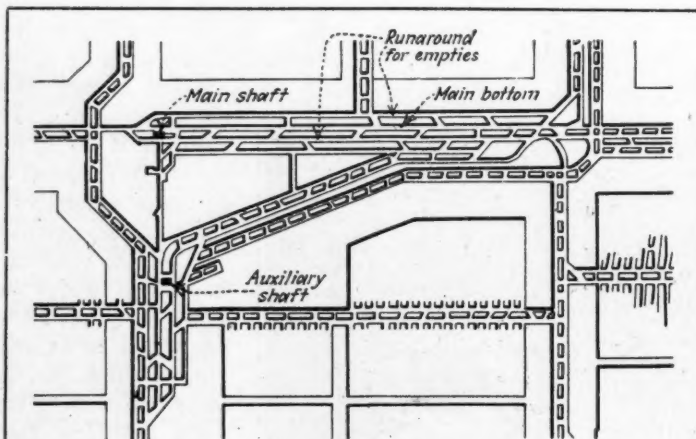


Fig. 4—Shaft Bottom Built for Big Tonnage

Prompt movement at the shaft bottom is absolutely essential if tonnage is to be maintained, and the Orient bottom is planned for a quick arrival at the dump and a quick getaway. Lost time at terminals is the big evil on railroads and also at mines. The short heading in the center and top of the illustration and the crooked heading which winds round the main shaft were both constructed for temporary purposes and have no part in the bottom as now operated.

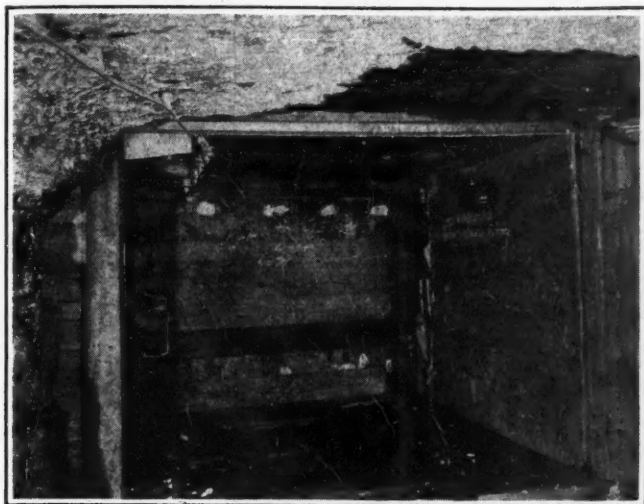


Fig. 5—Extra Door Installed at Strategic Points

In the New Orient mine the practice is to erect at strategic points in the air circuits two doors wherever one is needed. Doors are also installed in pairs where one is liable to be torn down or damaged by a locomotive as at the bottom of a stiff down grade.

stub entries from which the rooms are turned are the only openings in a panel. Reliance is not placed solely on the protection of the rock dust which is strewn on the surfaces of these entries. A prescribed weight of 1,600 lb. of rock dust is maintained in troughs and on shelves at the entrances to each panel. This in itself would stop the flame of a coal-dust explosion from leaving a panel should it pass from room to room through connecting open crosscuts without reaching the stub entries, which possibility seems remote.

The location of these shelves and troughs is indicated in Fig. 6. On the first stub entry at A are erected four shelves, each of which is 5 ft. long and 20 in. wide. On each of these are placed about 200 lb. of rock dust.

They are turned at an angle to each other, as indicated, so as to form a saw-tooth front. Where sufficient space is not available between rib and track for the location of these shelves, the same quantity of rock dust is placed on one-half of a discarded trap door which is erected at the mouth of the first room as indicated by B. At the so-called dead end of the second stub entry, as at C, are erected three rocker troughs which together hold about 800 lb. of rock dust. The rockers are curved to a 4½-in. radius.

As an additional precaution to prevent the spread of a coal-dust explosion from one panel to another opposite to it, a large shelf which is made from discarded trap doors is placed on each side of the stopping in the crosscut by which the two panels are connected.

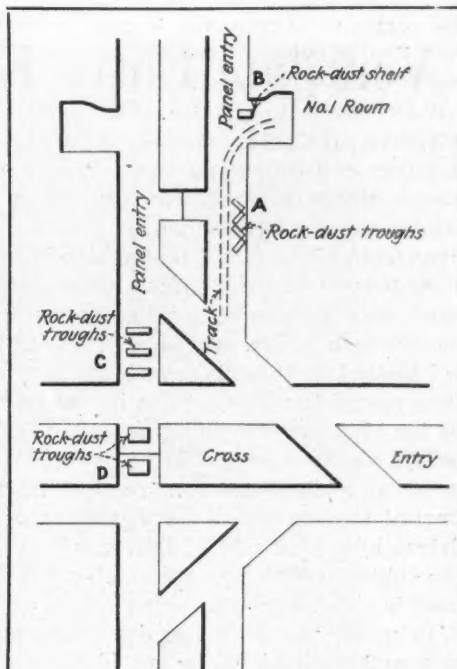


Fig. 6—Where Rock Dust Lurks

Every precaution is taken to provide that should an explosion occur it will be held within the panel. When sufficient room is not available at A for the erection of four troughs a large shelf is erected at the neck of No. 1 room. No less than 1,600 lb. of rock dust is distributed in or on the containers at A or at B and C and D.

Three Ways in Which New Orient Protects Itself Against Explosions and Fires

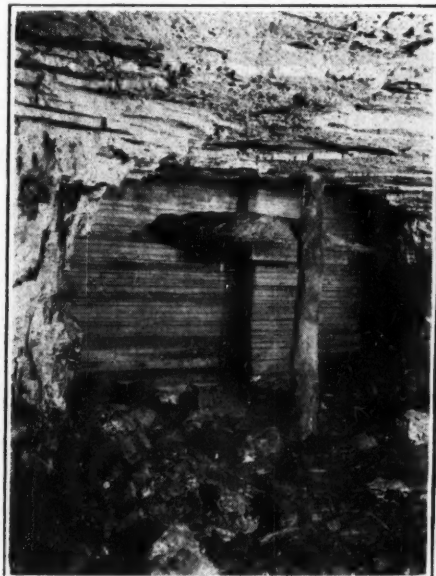


Fig. 7—A Big Rock-Dust Shelf

In order that an explosion will not spread from a panel on one side of a cross entry to a panel directly opposite, a large rock-dust shelf is erected on each side of the stopping in the chain-pillar crosscut between the two. The exact location of these shelves, each of which holds 450 lb. of dust, is indicated by D in Fig. 6. Brattice and dust shelf would fall together.



Fig. 8—Road Rock-Dust Coated

The New Orient management is convinced that rock dust saved it last winter from an explosion of great magnitude. The explosion killed five men; more might have been lost had it not been for rock dust which quickly checked the propagation of the explosion. At that time the mine was completely rock-dusted, and in that condition it is always maintained.



Fig. 9—Waiting for Mine Fires

Many mine fires can be put out easily if the means for doing so is kept always available. At this mine an extinguisher is placed on the haulway of the cross entry between every two facing panels. The charge consists of water, bicarbonate of soda and an acid. Such an extinguisher may be the means of saving hundreds of lives and hundreds of thousands of dollars.

Ventilate Entry Ends by Blowers

BELIEVING that the use of canvas tubing and blowers in the last or open crosscut of an entry is a long step forward toward greater efficiency and safety and far superior to line brattice in the ventilation of dead ends and narrow places, the New Orient management has installed fifty-seven blowers for use in such locations.

At New Orient the entry groups each consist of four headings driven in pairs with an unbroken pillar between pairs. Each pair is ventilated by its own split of air. Crosscuts between pairs are 60 ft. apart. The blowers are located on the intake at least 10 ft. outby of the open crosscut. When thus placed the blowers are in the fresh current of the intake unvitiated by the air leaving or being forced out of the face of the entry. The tubing is laid on the bottom of the heading; its discharge end is never allowed to be at a distance of more than 20 ft. from the face and is advanced toward the latter after every other cut. Normally the blower, which is driven by a $\frac{1}{2}$ -hp. motor, delivers about 500 cu.ft. of air per minute through the tubing, which has a diameter of 8 in. The average life of the tubing used is about 4 months.

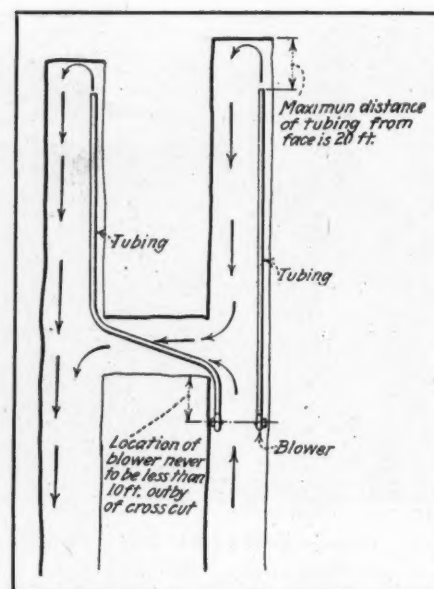
In uphill places, where dangerous quantities of gas are more liable to accumulate, line brattice and blowers are used in combination. Elsewhere the line brattice has been entirely eliminated. Each motor is inspected daily and repairs are made where necessary by an electrician who has no other duties. Consequently the blowers rarely fail.

Each day for a period of about $1\frac{1}{2}$ hr., during shooting which immediately follows the day shift, the power within the mine is cut off. After the shotfirers have completed their work, the entries are immediately examined by firebosses. If a dangerous accumulation of gas is detected at the face of an entry, the wiring circuit of the blowers in that place is broken by the opening of a switch with which each motor is provided. Hence, when the power is restored, only the blowers in gas-free places start up.

These bodies of gas are removed by bringing back the discharge end of the tubing to the outby fringe of the accumulation, from which point the air is advanced toward the face in short steps. In this way slices are taken from the body of gas, the purpose being to re-

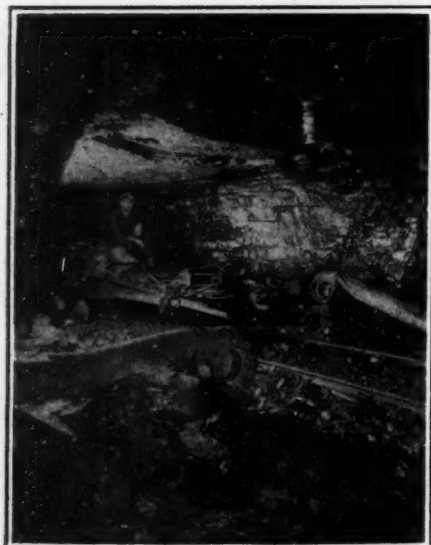
move it so gradually and to dilute it so thoroughly before it reaches the open crosscut that the electric blower to the outby of that point will not be surrounded by a gaseous atmosphere. Sometimes this operation involves the moving of the blower outby of its normal position.

A blower is obviously far more efficient than a line brattice. The latter conducts to the face only a portion of the volume of air which reaches the open crosscut. The blower delivers through the tubing many times more air. In the event of a big fall of roof, ventilation by means of a line brattice cannot be restored until after the debris is loaded out, but with a blower a new section of tubing can be laid over the fall.



Arrangement of Blowers

Each entry constituting a pair is ventilated by an individual blower which is located on the intake, at a point about 10 ft. outby of the open crosscut. The inner end of the tubing is never allowed to be more than 20 ft. away from the face.

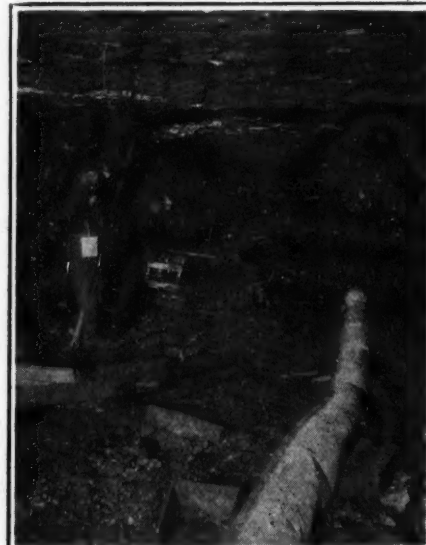


Blowers at Source of Good Air

After all is said and done one must admit that the biggest step toward making a mine safe lies in ventilation. First dilute gas as it is generated at the face, and then force it immediately to a return. Thereby the biggest danger in coal mining is removed. No other means is quite so effective as the blower in accomplishing this aim. The blowers shown are small and portable.

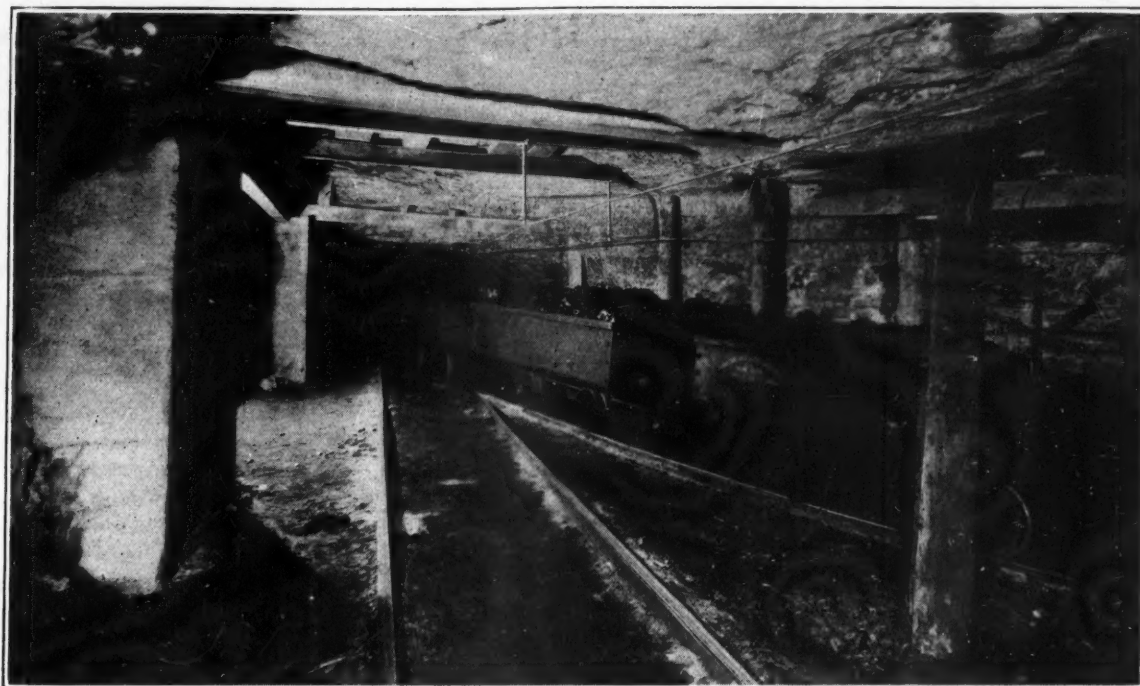
VENTILATING TUBES SAVE SPACE

Where blowers are used machine cutters and loaders are not hampered in their work as they are by line brattices which at times, in the mines that use them often have to be hung so close to the face as to be in the way. The blower pipe can be put close to the face, but with the advantage that if it hampers operations it can be moved wherever desired. Some have opposed wide bars because of lack of room for line brattice, but with blowers space is not lacking.



Blowers Bring Fresh Air to Face

As entries are generally driven rather narrow and as the track is laid equidistant from the two ribs, line brattice, when it is used, cannot be anywhere but near the track, where it is exposed to the chance of being torn or displaced by a passing mine car, locomotive or cutting machine. A blower tube, however, can be placed at a safe distance to one side of the track.



Big Output Does Not Rush Haulage in New Orient

At Present Gathering Locomotives Haul Much Coal from Working Faces to Rotary Dump—Advantages of New Orient Car—Shaft-Bottom Layout Aids Greatly in Getting Big Output

A FRANK RECOGNITION of the importance of haulage problems is an outstanding feature in the planning at the New Orient mine. Its haulageways are railways rather than tramroads. Good grades, heavy rails, ample partings, block signals, telephonic dispatching, big, specially designed cars and an ample well-planned shaft bottom are among the provisions made for the transportation daily of the equivalent of three railroad trains of eighty cars each holding 50 tons, all three trains being 2,850 ft., or over half a mile long.

This is a tremendous daily undertaking for any kind of equipment but greater still is it, in view of the fact that the tonnage must be hauled through mine tunnels and carried in cars which, no matter how favorable the height of the coal and the strength of the roof may be, and New Orient is thus favored, must always be small as compared with a railroad gondola or hopper car. Height, breadth and length of car are all restricted at mines by operating conditions, among which must be kept in mind the restrictions imposed by hand loading.

It is notable that New Orient allows only a certain definite grade against the loads in main haulageways. It does not try to make use of momentum grades which have in the past caused racing of motors, derailments and uncertain operation. Once a trip stops at the foot of a momentum up-grade, restarting is difficult, and the schedule is disrupted, so New Orient on its main haulageways has limiting grades up which any loco-

tive that runs on those roads can pull its full quota of cars from rest.

The live workings in New Orient are not yet far enough removed from the hoisting shaft to warrant the general practice of hauling coal to the rotary dump in long speedy trips. At present only two 13-ton locomotives are in use. These haul trips of as many as thirty cars (about 165 tons of coal) from the more remote sections of the mine. Up to the present the practice has been to utilize many of the gathering locomotives for hauling small trips from the face to the rotary dump because most of the panels are still comparatively close to the shafts. As the working places get further away, larger and faster trips will be provided, tandem locomotives being, in all probability, used. Thus, the present-day haulage practice at New Orient will be changed when the distances get longer, for the haulage problems of a new and an old mine are essentially different.

BIGGEST ADVERSE GRADE 1½ PER CENT

Though the coal seam in this mine is, in general, flat, it has in almost every direction troublesome swags and humps, which in some instances are quite abrupt and of considerable proportions. When these occur on the main haulways they are smoothed out so as to leave no grade against the loads of more than 1½ per cent.

As two tracks are provided on the main haulageways, loaded and empty trips do not interfere with each other. Main-line tracks are laid with 70-lb. rails those in cross entries with 60-lb. rails and those in panel entries and rooms with 30-lb. rails. The heaviest rails, which are also those which will be longest in use, are supported

Headpiece shows trip of cars on the way to the dump. Note the manner in which the roadway is lighted, the substantial tracks and the equally substantial cars running over them.

by creosoted ties, as sound judgment requires.

Only heavy rails are strong enough to carry the New Orient cars with their great weight and unusual capacity. Cars of like design but of smaller yardage have been installed in the Warden mine of the Pittsburgh Coal Co. They were fully described in the June 4, 1925, issue of this magazine, p. 838. Hence, only such major details of the New Orient car as relate to its serviceability in operation will be mentioned here. It is of all-steel construction with bow ends, see Fig. 1. This gives it greater capacity than a truly rectangular car of similar overall dimensions.

The all-steel body construction is made possible by the use of rubber snubbers in the journal-box rigging, which yield a little when the car passes over frogs and the offsets at rail joints. These cars, even when traveling at high speed, do not sway beyond safe limits and pass over offsets without undue jarring. The all-steel construction also is suitable to the needs of this mine, inasmuch as the coal seam is usually dry. Neither the underside nor floor of the car shows practically any tendency to rust.

The combination of a spring drawbar with a semi-automatic coupler, which is one of the major features of this car, has shown its value under the conditions existing at this mine. The complete coupler unit is illustrated in Figs. 3 and 4. It consists of two parts, the inner and the exterior member, the former on one car being mated with the latter on an adjoining car. Both are equipped with buffer springs; these provide sufficient slack, to aid a locomotive in pulling out under heavy load. They also absorb the shock that the trip sustains when the cars running along under tension, are suddenly checked, beginning at the front end, and bump against each other.

As these springs retain most of their resiliency through long service without breakage, few of them have had to be replaced. In fact, so fool-proof are these and other features of the coupler that the company is now riveting, to the stub channels under the floor of the car, the guide plates which hold in place the various parts. As originally designed these guide plates were held by bolts which worked loose and could not be drawn up because of rust.

Much value should be attached to the self-aligning feature of this coupler. The exterior member has scarcely any side play and always remains on center; but the inner member is provided with a self-centering trunnion in which the swivel action is centered. When the inner member is pulled out of line and then released, it rights itself automatically. All that

is required to assure this positive action is an occasional application of a lubricant to the rubbing surfaces.

The coupler is said to be semi-automatic because the retaining pin must be cocked, but not completely inserted. The impact between two cars while being coupled releases the pin from its cocked position and causes it to fall into its normal coupling position. By this mechanism cars are coupled with great facility. In consequence, injury to hands and limbs of haulage operatives during this operation are practically unknown, for they can stand in the clear and let the cars themselves complete the coupling.

Another advantage of this type of coupler for a heavy car is its great strength. A link hitching when built of sufficient strength to serve the purpose would be of such

weight as to be unwieldy and therefore dangerous. Furthermore, the chance of its breaking at an inopportune moment would be ever present.

The car, when loaded by hand in rooms, holds on an average about 5½ tons. When loaded by hand at the face of entries it holds less—from 4½ to 5 tons—because the coal from such places is not so lumpy. The total number of cars installed is 750, of which the majority are 42 in. high as measured from the rail. In order to compare the desirability of these cars with those of greater heights, a few were built which stand 45 and 48 in. above the top of the rail. In hand-loading practice it has been found that a man will build up a car to a fixed height above the rail, which, relative to the 42-in. car, is about 2 ft. above the top. On the 48-in. car, consequently, the load is built up above the top only about 1½ ft. The higher cars, however, have shown some advantage where the coal is loaded by machines, because in that case naturally no building of the sides of the car has been attempted. The average content of a car loaded by machine is about 4½ tons.

As already mentioned, trips of from six to eight cars are hauled by gathering locomotives directly from the faces of working places to the rotary dump wherever the distance is not excessive. But as the workings are being extended, partings are being established and main-line trips are being scheduled.

In connection with Table I it should be noted that there is no fixed relation between the weight of the locomotives and the number of cars handled in a trip. The 13-ton locomotive, for instance, though it has roughly only twice the weight of the 6-ton locomotive, hauls 4 to 5 times as many cars per train load. This is due to the better track and more favorable grades provided on the main haulage

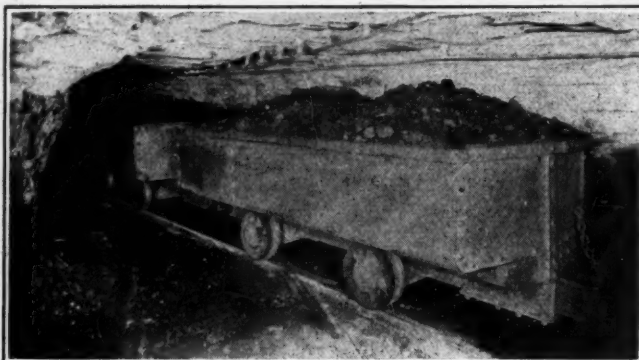


Fig. 1—New Orient Car, Strong, Capacious, Flexible, and Easy to Couple

Bow ends increase the capacity of this car and contribute to its strength. Members are heavy only where great strength and ruggedness are needed. The car stands 42 in. above the rail, which is not high considering its big capacity.

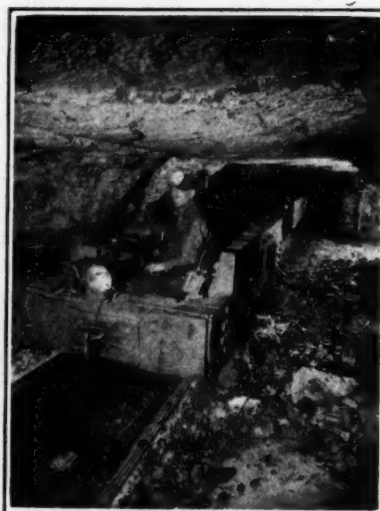


Fig. 2—Gathering Locomotive "High-Balling" to Bottom

With main-line haulage moving over two tracks, traffic congestion is avoided. Consequently, when the haul is short, gathering locomotives move from the faces to the big bottom. This arrangement obviates the need for sidetracks. Later, of course, when the workings are far enough removed from the hoisting shaft, trips of many cars will be handled by large locomotives, perhaps operating in tandem.

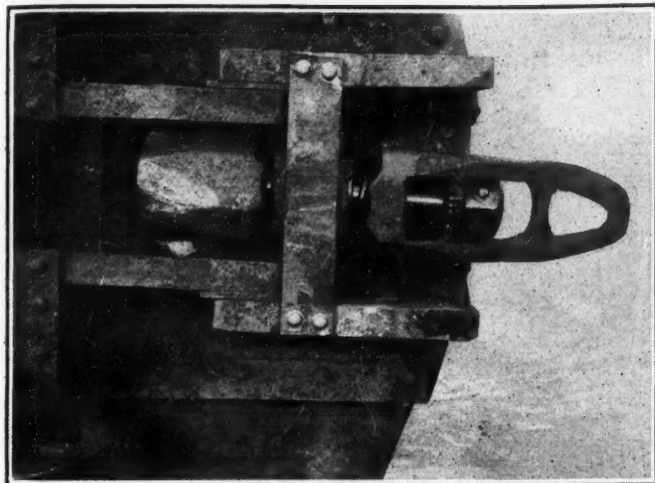


Fig. 3—Inner Member of Mine-Car Coupler

This member is provided with a self-centering trunnion in which the swivel action is centered. It automatically rights itself from any off-center position. Buffer springs take most of the shock when the cars bump together as the result of a slackening of speed. These springs also assist when a locomotive starts out under heavy load, giving some of the leeway that is usually provided by the slackness of a chain-coupling.

ways, on which the big locomotives invariably travel for their entire run. The locomotives are enabled to pull a larger load than is normal for equipment of that weight because the cars are fitted with roller bearings that reduce starting and running friction.

Table I—Locomotives at New Orient and Number of Cars Hauled

Weight of Locomotive (tons)	Number In Use	Number of Cars in Trip Handled by Each
6	4	6 to 8
8	28	8
10	3	14
13	2	30

Where coal is loaded by hand and partings are necessary, these are established on cross entries at every other pair of panels, a pair being interpreted as two panels lying opposite to each other with respect to the cross entry. Between two such panels is laid the parting which is about 400 ft. long. That part of the straight road which lies within the confines of the parting serves for the storage of loads, and a 30-lb. track parallel to it is provided for the storage of empties. In sections where the coal is loaded by machines, twice

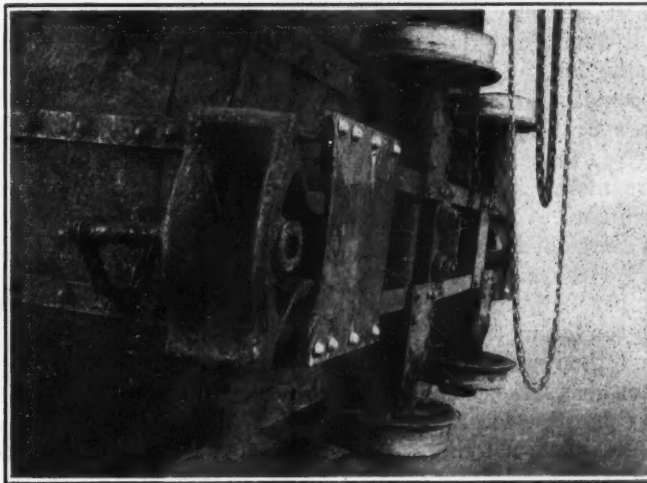


Fig. 4—External Member of Coupler

The flaring of the sides at the end of the external member allows this portion of the semi-automatic coupler to remain on center even when the car passes round a sharp curve. The coupler is said to be semi-automatic, because two cars can be joined merely by cocking the retaining pin in the slotted hole as shown. Any impact of one car on another throws this pin out of balance and causes it to fall into place.

as many partings are provided, one for each pair of panels.

A dispatcher, who is located at the main junction, routes all trips on the main line by telephone and controls them by means of block signals. The main haulageways are illuminated by electric lamps.

The layout and plan of operation of the main bottom are more a part of the haulage than they are a complement of hoisting. Consequently, comments upon these features rightly belong here.

Simplicity is a characteristic of practically every detail in the arrangement and equipment of the big shaft bottom, which constitutes the southern end of the main north entry. It has an overall length of about 1,500 ft., of which 200 ft. constitutes the empty and 1,300 ft. the load end. On each side of the main entry of the big bottom is a runaround which serves for the storage of empties. Each of these is connected with the center entry by two 45-deg. crosscuts, one on the load end and one on the empty end.

The load end is provided with two tracks, on each of which about 100 cars can be stored. During the night



Fig. 5—Trip Feeder at Dump

This feeder moves as many as 100 loaded cars to the dump, which operation is possible only because the load-end tracks are level. As the feeder is reversible, mine cars in the dump can be spotted forward or backward.

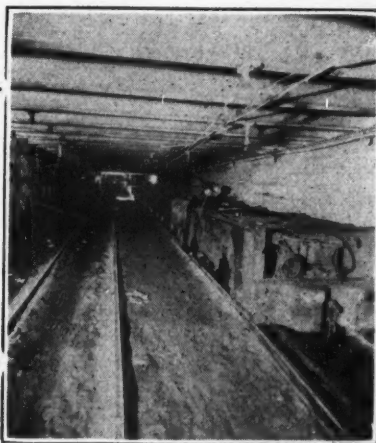


Fig. 6—Making Up an Empty Trip

Cars are emptied in the rotary dump without uncoupling. When a string of ten or twelve cars has passed through the dump, it is uncoupled from the remainder of the trip and switched into either of two runarounds. This operation is performed by the 10-ton locomotive shown in the illustration.



Fig. 7—Sampling Haulway Dust

Walter Nichols who keeps the mines of the company safe is shown taking a dust sample on a haulage road in the New Orient mine. "When" and "how much" rock dust is needed are determined entirely by samples.

shift both tracks are utilized for the storage of loads; but during the day shift only one is so used, the other being kept clear for the operation of a 10-ton pusher locomotive, which pushes the incoming trips up to the cars still waiting to be dumped. By an electrically-driven feeder as many as 100 cars in an unbroken string are moved to the dump which rotates and discharges two cars at one time without uncoupling. This feeder is controlled by the dump operative.

As the cars emerge from the dump and enter the empty end, they are uncoupled in twelves, and by a 10-ton locomotive are pulled in the clear of the crosscuts and then pushed into either of the runaround empty storage tracks. The empties are picked up without delay by the locomotives, which, arriving with loaded trips, make a flying switch into the runarounds to get them.

The trip feeder is 35 ft. long and is driven by a 35-hp. motor. It is reversible, which characteristic makes it possible to move, back to the desired position, any two cars which may have been allowed to over-run their normal position in the dump. This departure from common practice is possible only because the load end is level as far as the trip feeder, though the latter is on a down grade of $1\frac{1}{2}$ per cent. From the feeder, through the dump and for a short interval on the empty end, the down grade is 2 per cent. Beyond this short 2-per cent grade the empty track is level. Consequently, in a forward move the gravity pull of the cars on the down grades assists the feeder in overcoming the rolling resistance of the cars on the level track. In a backward move the feeder is required merely to pull those cars which are on the down grades and to overcome the rolling resistance of as many cars on level track as will furnish sufficient slack through their couplers for the required shift.

This unusually satisfactory arrangement was made possible only through foresight in the early days of construction. The main north entry was driven a long way beyond the big bottom before any attempt was made to decide what would be the proper elevation for the rotary dump. This is a point in design well worth keeping in mind. Many shaft-bottom layouts are improperly fitted about a bottom landing which is either too much above or too much below the gradient of the seam. It is always well to know, through exploration, what the conditions are in the vicinity of the shaft before the final plan of the bottom is approved.

Only nine men are employed on the big bottom, including a check lifter, two weighmen, an oiler and a compressor runner. Of the nine men, only four are actively engaged in handling trips and dumping coal. These are, a rotary-dump opera-

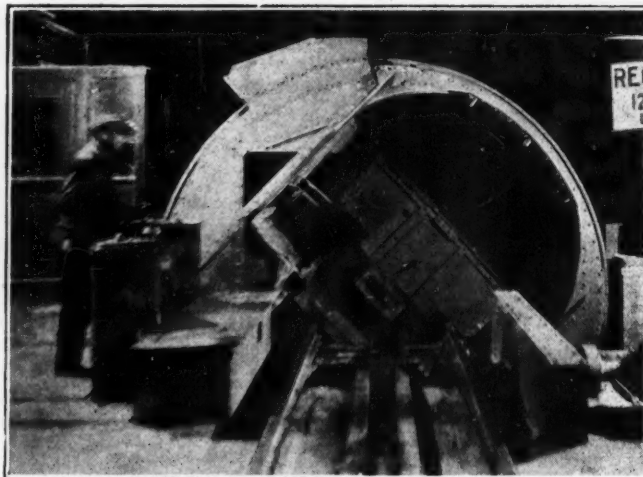


Fig. 9—Two-Car Rotary Dump Handled as Part-Time Job

Two cars at a time are dumped without being uncoupled. The dump operative also controls the trip feeder and has become so expert in the manipulation of the two controllers as to co-ordinate the movements of both mechanisms to a nicety. Consequently, he loses little time in the dumping operation. The glazed booth on the left is the weighroom.

tive, a car coupler and two men who operate the push motors. The latter also do some coupling.

The contents of four to six cars are dumped and hoisted per minute. The speed of these two operations can be nicely adjusted to whatever output is desired for the day. On days of large output dumping and hoisting are executed as methodically and deliberately as on days of ordinary runs. Big tonnage occasions neither hurry nor confusion.

The hoisting compartments of the main shaft are exhausts, as is also the auxiliary, or man-and-material, shaft. The load end of the big bottom is swept by a split from the main return, which carries up the shaft what coal dust is floated in the air by the dumping operation. The empty end of the big bottom is dead-ended, but a small split of fresh air is provided which carries the dust from that end to a door which leads to the hoisting compartments.

Transportation facilities have changed the business of operating coal mines. Impermanent structures were

necessary so long as they were served by a transportation system so inadequate that the haulage of coal for long distances was unduly costly. With well equipped and well handled roads, the one stationary terminal can be fully equipped and permanently built, for it has a long life of usefulness assured it. New Orient's designers and operating officials have had this in mind constantly. In years to come, when the haul becomes long, New Orient will be well prepared to move its daily quota despite the distance to be traversed.

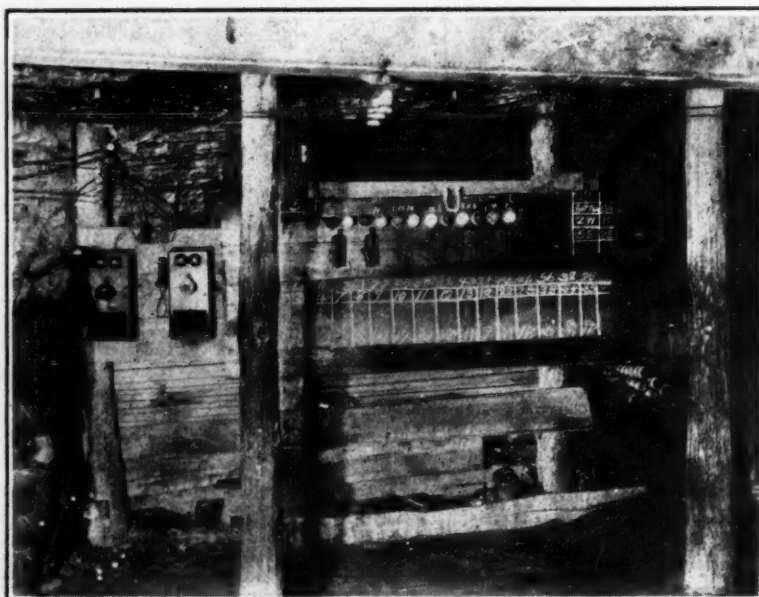


Fig. 8—Where Dispatcher Regulates Movement of His Trips

This station is located at the main junction and is not elaborate because the haulage is not yet complicated. The dispatcher sends specific orders by telephone and gives right-of-way to the motormen in accordance with the block system.

Uniformity of size assures uniformity in combustion. Nowhere can selling problems be settled more surely and amicably than at the mine by absence of ash, correctness of sizing and low cost.



A lot of coal, this; but not so much for New Orient as it represents less than two hours' work at capacity operation. Such refined sizing as here displayed has won many markets for this coal.

New Orient Coal Receives Thorough Cleaning and Sizing in Modern Surface Plant

Equipment Will Prepare Seven Sizes Besides Mine Run and Two Kinds of Screenings—Degradation Products Removed from All Coal Sizes Inclusive of Pea—All Screenings Are Stored in Bins Prior to Loading

NEW ORIENT is adequately equipped to prepare thoroughly in eight hours its capacity output, which is conservatively estimated at 12,000 tons but will doubtless in time prove to be much more. The equipment is so complete that seven sizes can be prepared simultaneously, these ranging from plus 6-in. lump to minus $\frac{1}{8}$ -in. carbon. When the market demands are not so exacting as to size mine run, 2- or 1 $\frac{1}{2}$ -in. screenings can also be separately loaded. Separation into the various sizes is carried to a high degree of refinement by the use, where practicable, of relief and degradation screens.

The relief screens make a preliminary separation of the larger coal and thereby allocate a lighter feed to the screens by which the coal is more exactly sized. The degradation screens remove the last traces of undersize coal. Delivery of rescreened sizes into railroad cars

is regulated by having a storage bin for each size.

The following percentages of sizes are representative of New Orient and probably of mines in the Franklin County field as a group: Plus 6-in. lump, 19.5 per cent; 3x6-in. furnace, 22.0 per cent; 2x3-in. egg, 12.5 per cent; 1 $\frac{1}{2}$ x2-in. stove, 10.5 per cent; $\frac{3}{4}$ x1 $\frac{1}{2}$ -in. chestnut, 9.5 per cent; $\frac{1}{2}$ x $\frac{3}{4}$ -in. pea, 8.0 per cent and minus $\frac{1}{8}$ -in. carbon, 18.0 per cent.

The coal-handling and preparation equipment is housed in three structures, namely, the main tippie at the big shaft, the auxiliary tippie at the secondary shaft and a rescreening plant. In the secondary shaft some coal is hoisted for inspection purposes, and this is carried by belt to the main tippie where it is joined

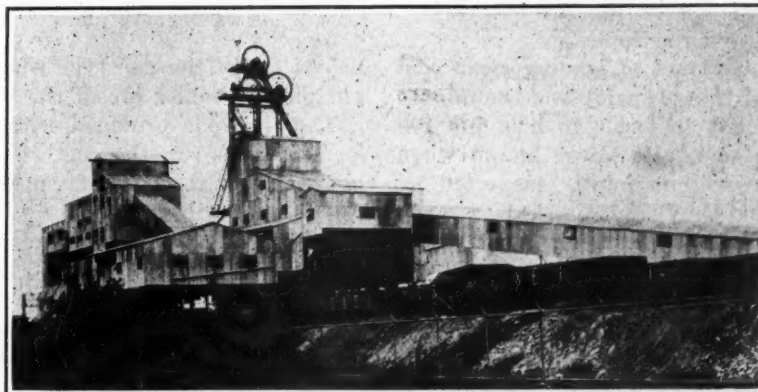
with the coal that is hoisted in the main shaft. In the main tippie are prepared plus 6-in. lump, 6x3-in. furnace coal and 3x2-in. or No. 1 nut coal.

The tippie is also equipped to load run-of-mine and 2-in. screenings. When the market demands warrant refined separation into smaller sizes, the 2-in. screenings are transported by belt to the rescreener. In the latter plant are prepared 1 $\frac{1}{2}$ x2-in. No. 2, or stove, coal, $\frac{3}{4}$ x1 $\frac{1}{2}$ -in. No. 3, or chestnut, coal, $\frac{1}{2}$ x $\frac{3}{4}$ -in. No. 4, or pea coal, minus $\frac{1}{8}$ -in. No. 5, or carbon, coal and also 1 $\frac{1}{2}$ -in. screenings.

The auxiliary shaft is equipped with overturning, self-dumping cages which are used primarily for hoisting men and materials; but as before-mentioned these cages are utilized for hoisting a limited quantity of coal; they are also used for hoisting what little rock is taken from the mine. Coal is emptied from the mine cars on these

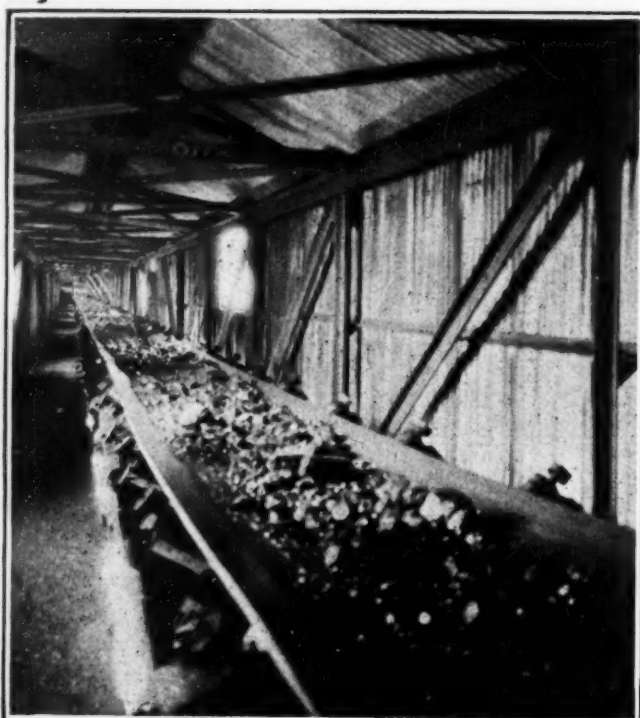
cages into a chute and thence into a weigh pan which deposits it on an apron feeder. The latter feeds the coal to the main tippie where it is joined with the coal which comes from the skips in the big shaft.

In the chute between the cages and the weigh pan at the auxiliary shaft is a fly-gate which can be thrown so as to bypass rock from the cages to a flat-bottom chute. This chute discharges into a railroad car at one side of the auxiliary tippie. The rock is hauled by a steam shifting-engine to the swampy land surrounding the plant where it is disposed of by a clamshell crane. Incidentally it may be said that this machine is used chiefly for unloading timbers and other materials in the supply yard.



Where the Product at New Orient Is Prepared

In front of the headframe is the main tippie and behind it the rescreener. These two structures are connected by a steeply sloped conveyor and gallery. The gallery on the right connects the auxiliary tippie with the main tippie.



Where Company and Union Examine Miners' Coal

Some coal is hoisted in the auxiliary shaft, as a rule for inspection purposes. This 4-ft. belt conveyor, which is 442 ft. long, carries this coal to the main tippie. This conveyor can also be utilized in the reclaiming of storage coal from a recovery pit which is located on the south side of the auxiliary tippie.

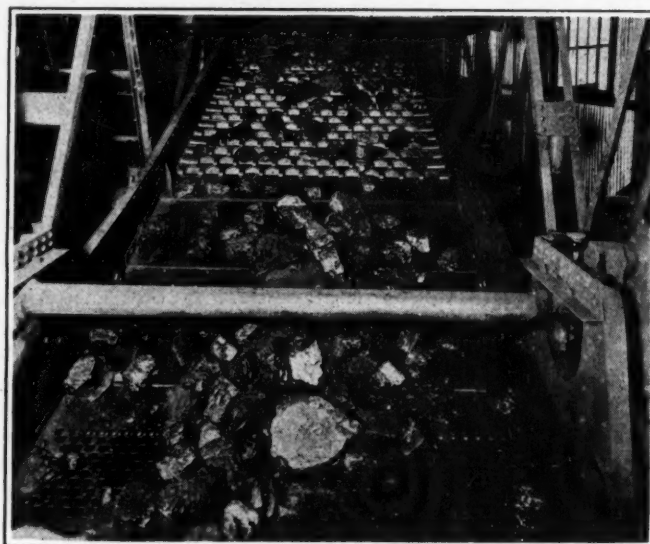
Almost any quantity of coal can be conveniently stored on the grounds outside the limits of the plant. On the south side of the auxiliary tippie is a recovery pit, from which reclaimed coal can be discharged by two reciprocating feeders onto a drag conveyor. By the latter means this coal can be carried to the belt conveyor which leads to the main tippie.

So convinced of the importance of loading clean coal have been the operators of this property and the miners that they have decreed that in order to hold his job a miner must load clean coal. He never knows when the product of his labor will be jointly inspected by representatives of the company and the union. Any trip headed for the big bottom may be shunted to the auxiliary shaft and there hoisted car by car and the contents inspected as it moves on the belt conveyor from the auxiliary to the main tippie. A miner who is docked three times within a single month for having loaded dirty coal, besides being fined for each offense, is suspended for three working days. The fines go to the union. An aggravated case, such as is the deliberate loading of refuse with coal, is punishable by dismissal.

From the 13-ton skips in the main shaft, coal is deposited in two receiving hoppers into

which is also discharged any coal that is conveyed from the auxiliary shaft. The top of these hoppers is about 60 ft. above the ground. The coal in them is fed by two apron feeders to two main reciprocating screens, each of which handles half the capacity of the mine. These screens are of the pendulum-hanger type and are 8 ft. wide. Each is driven at a rate of 100 to 120 strokes per minute by a 35-hp. induction motor. They separate 2-in. screenings, and from the larger coal prepare plus 6-in. lump, 3x6-in. furnace and 2x3-in., No. 1 nut coal.

Each of these three larger sizes passes onto either of two picking tables which empty onto a common loading boom. The lump picking tables and all the loading



One of the Two Main Reciprocating Screens

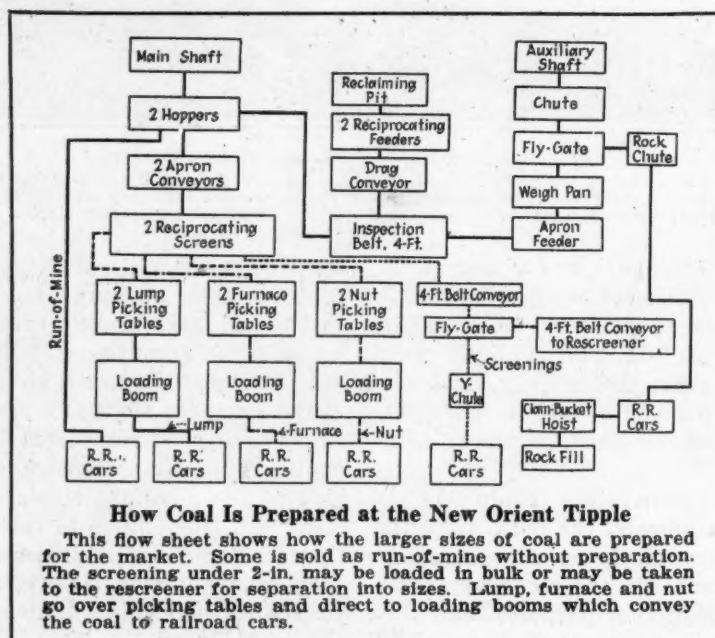
This screen will handle over 6,000 tons in eight hours; half the tonnage of the mine. On it are prepared plus 6-in. lump, 3 x 6-in. furnace and 2 x 3-in. egg. It is of the pendulum-hanger type.

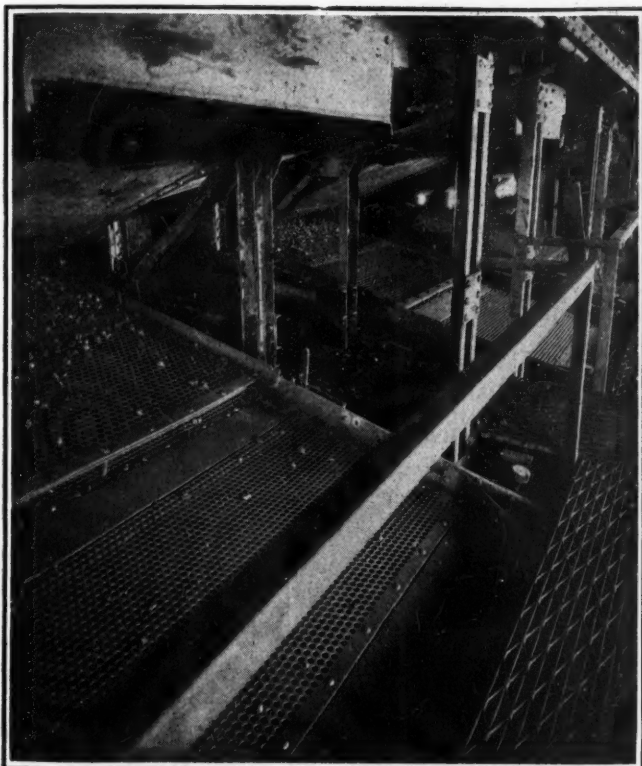
booms are of the pan type whereas the furnace and the nut picking tables are of the belt type.

The tippie is provided with five loading tracks. In loading mine-run the coal runs down chutes from the hoppers that receive it from the skip and is discharged direct into railroad cars on two mine-run tracks. The latter tracks also serve for the loading of screenings

which are transferred from the main screens by a 4-ft. belt conveyor to a discharge fly-gate. This may be adjusted either to act as an extension from the transfer conveyor to Y-chutes over the mine-run tracks or to deflect the screenings from the transfer conveyor onto another 4-ft. belt conveyor which carries this coal to the rescreening plant when further sizing is desired.

The last-mentioned conveyor is unusual in that it is on a 21-deg. slope whereas in general practice the limit is understood to be about 18 deg. However, in





Chestnut-Size Shaker Screens in Rescreener

These prepare coal ranging between $\frac{3}{4}$ and $1\frac{1}{4}$ in. The upper deck of these screens has $1\frac{1}{4}$ -round openings and on this is made the preliminary sizing that is completed on the deck below. Directly over these screens are the stove-coal shakers which are shown in the previous illustration.

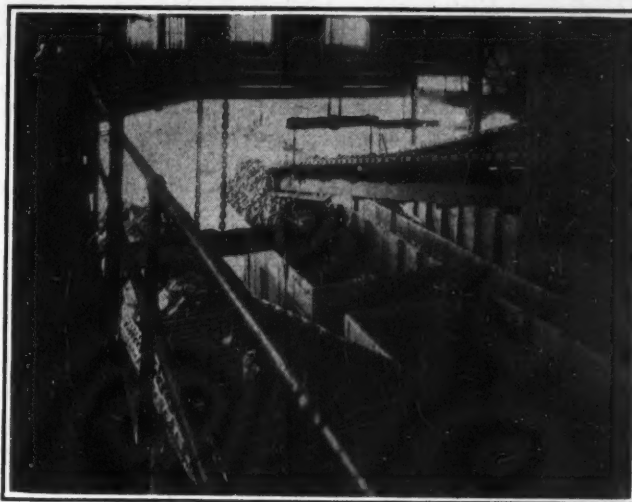
this case the product handled is a mixture of many small sizes which when uniformly spread do not slide and carom down the conveyor. This conveyor is 156 ft. long, has a capacity of 850 tons per hour when traveling at a speed of 450 ft. per min. and raises the coal to an elevation of 72 ft. above the ground.

The plant is in duplicate and so designed that from this stage onward any size may take either of two paths which lead to the same railroad car. In the rescreening

plant the 2-in. screenings are discharged from the incoming conveyor into a primary V-trough, drag conveyor. In the trough of this conveyor are rectangular openings and under these are inclined chutes or pockets at the discharge end of which are revolving, star-type feeders. The latter regulate the flow of coal to vibrating screens which are located beneath them. Directly over each star feeder and at the mouth of the chute is a vertical slide plate which can be adjusted to vary the rate of feed.

On each side of this drag conveyor are six star feeders which are chain-driven from a common line shaft. Jaw clutches are provided by which any one of the feeders can be caused to rotate with the shaft. The two line shafts are driven from one 20-hp., variable speed, induction motor which is installed above the drag conveyor.

By this arrangement the coal in the drag conveyor is divided evenly into two parts, half going to one side

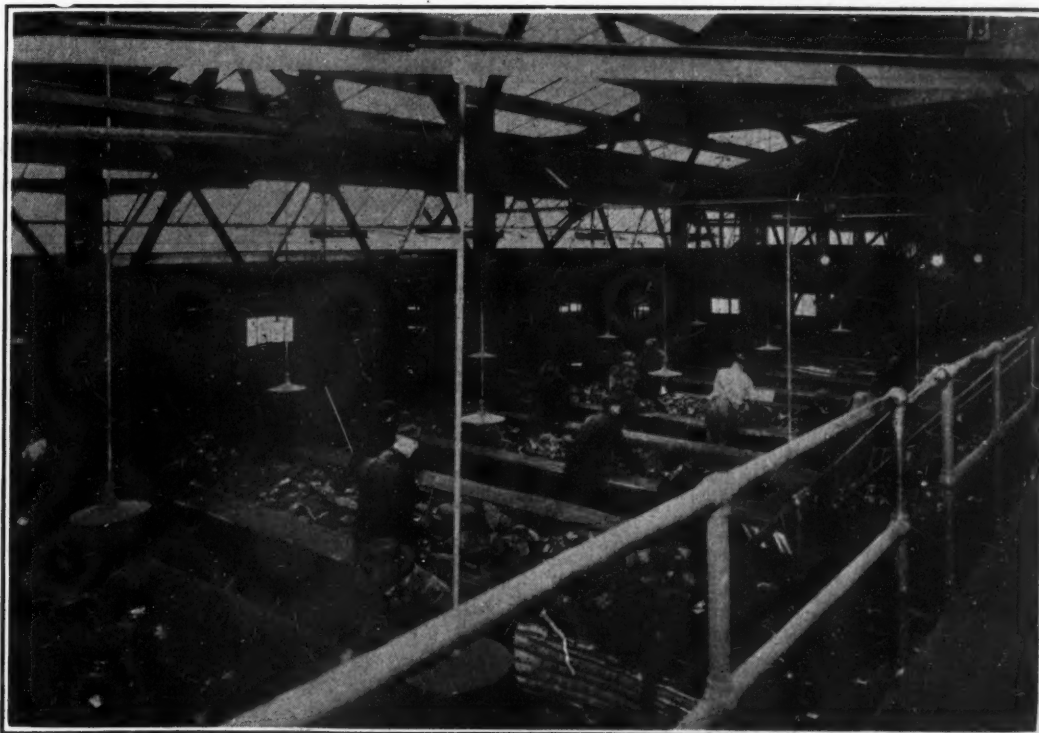


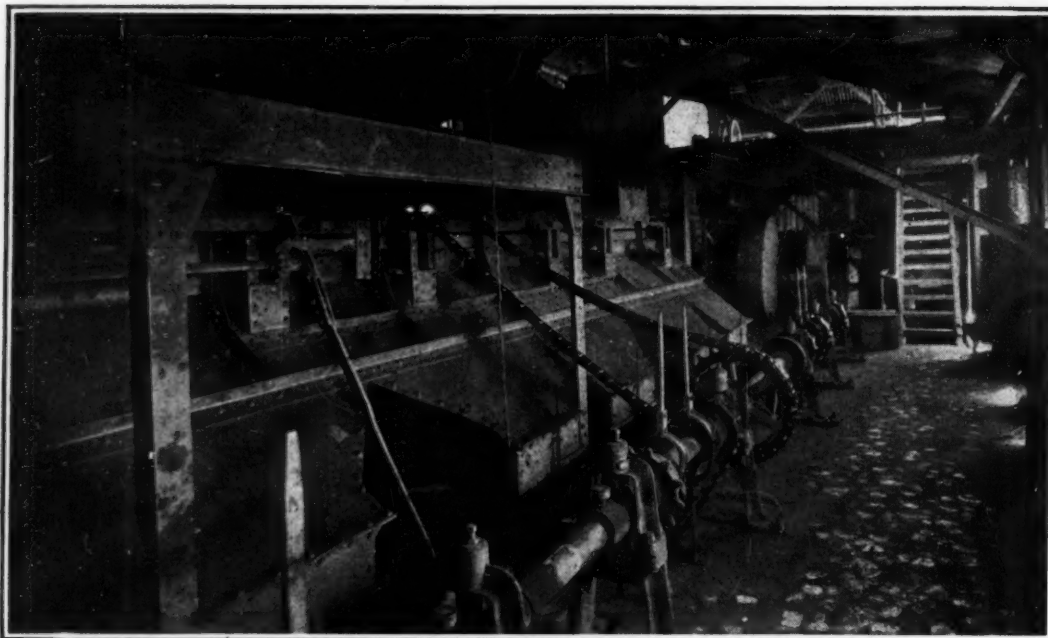
Loading Booms Place Coal with Minimum Breakage

All sizes down to $\frac{3}{4}$ in. are lowered into the railroad cars by loading booms. The man at the far left is sitting in the control room where practically all the equipment in the tippie can be started or stopped by means of push buttons.

Main Picking-Table Floor

Each of the three larger sizes is cleaned by means of two picking tables. The two tables in the foreground are of the apron type and on them are cleaned plus 6-in. lump coal. The two middle tables carry 3 x 6-in. furnace coal. These and two tables behind them are of the belt type. Light in abundance is provided.





Star Feeders

On the top of the rescreener is this V-trough drag conveyor with rectangular openings to six chutes on either side. At the mouth of each chute, under this floor, is a revolving, star-type feeder. The drag conveyor keeps these chutes or feed pockets supplied with 2-in. screenings, and the star feeders regulate the flow of this coal to twelve primary vibrating screens which are directly under this floor.

and half to the other. Each half is fed to six primary, double-acting, vibrating screens which are on a slope of $31\frac{1}{2}$ deg. Each primary vibrating screen is 4 ft. wide and is composed of two screen sections, the upper being $2\frac{1}{2}$ ft. long and the lower $4\frac{1}{2}$ ft. long. The upper section is vibrated with twice the intensity of the lower. On the upper section the larger portion of the fines is removed so that the lower section functions more efficiently in removing the last of the undersize coal.

That coal which passes through the primary vibrating screens is fed onto secondary vibrating screens on a 33-deg. slope, which separate $\frac{1}{2}$ x $\frac{1}{2}$ -in., No. 4 pea from minus $\frac{1}{2}$ -in. No. 5 carbon. Each of the secondary vibrating screens is 4 ft. wide and is composed of two sections, the upper being $2\frac{1}{2}$ ft. and the lower $4\frac{1}{2}$ ft. long. Each of these two sections is vibrated with an intensity which matches that of the lower section of the primary vibrating screens.

No. 4 pea coal which passes over the secondary vibrating screens is fed to a 24-in. belt conveyor which takes it to a bin of 189-ton capacity. From the latter it is

loaded through chutes into railroad cars on either or both of the two rescreener tracks. The No. 5 carbon coal which passes through the secondary vibrating screens drops directly into a bin of 290-ton capacity and is loaded by chutes into cars on either or both tracks.

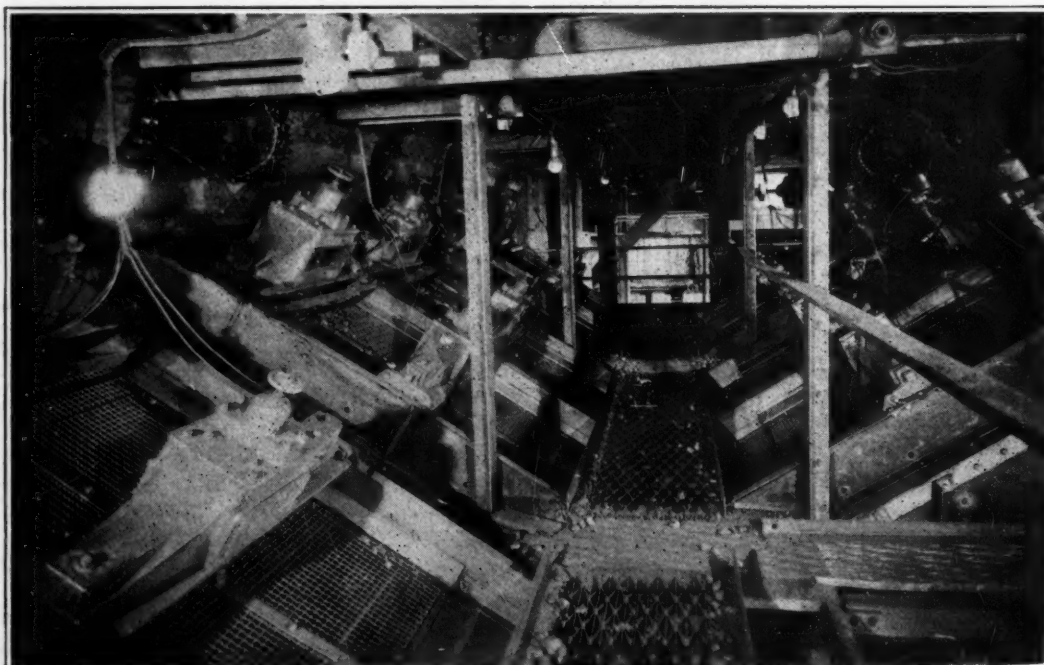
The $\frac{1}{2}$ x2-in. coal which passes over the primary vibrating screens is taken away by the upper run of a secondary flight conveyor to four sets of shaker screens. Each set is composed of a primary, double-decked and a secondary, double-decked screen in an arrangement whereby the former is directly over the latter. The screens in two of these sets are 7 ft. wide and those in the two remaining sets are 6 ft. wide.

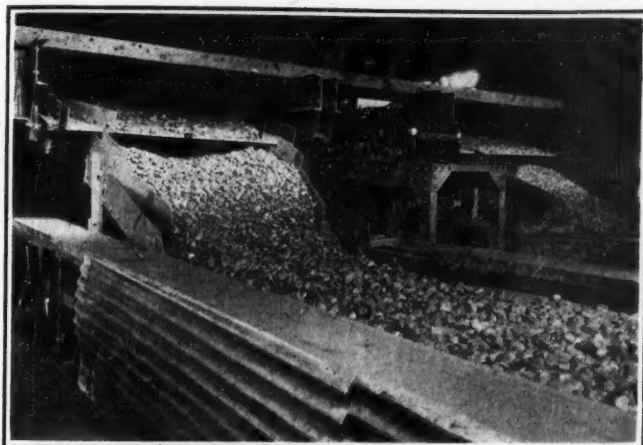
On the primary shaker screens is prepared $1\frac{1}{2}$ x2-in., No. 2 stove coal. The upper and the lower deck of the primary screens are provided with $1\frac{1}{2}$ - and $1\frac{1}{2}$ -in. round openings respectively. The coal which passes over these two decks of the primary shaker screens is guided by chutes into a bin of 264-ton capacity.

That coal which passes through the primary shaker screens slides onto the secondary shaker screens. The

Primary Vibrating Screens

These screens remove all coal over $\frac{1}{2}$ in. from the 2-in. screenings. The undersize slides to secondary vibrating screens under the primaries, and the oversize is carried by a flight conveyor to shaker screens in another part of the rescreener where a further subdivision is made into No. 2 stove coal and No. 3 chestnut. The star feeders can be seen at the head of these screens.





Degradation Screens and Tables for Small Sizes

The near unit is for stove coal and the far unit for chestnut. Each size is fed from a two-compartment bin and each has two shaker degradation screens. Broken coal is carried by the drag conveyor which is seen between the two tables back to the point of beginning of the rescreening process.

upper deck of these screens is provided with 1½-in. round openings whereas the openings in lower deck are of ¾-in. diameter. The ¾x1½-in., No. 3 chestnut coal, which passes over these secondary shaker screens, is carried by chutes to a bin which has a capacity of 232 tons.

The fine coal which passes through the secondary shaker screens is carried by the return run of the secondary flight conveyor to a bucket elevator. This lifts the coal to, and deposits it on, the head of the primary trough conveyor where it is joined with the incoming coal from the main tippie.

At this stage of the process all the rescreened sizes are in their respective bins. Each of the sizes, with the exception of minus ¼-in. No. 5 carbon, is fed from its bin by a reciprocating feeder to two degradation screens before it is loaded into the railroad car. These screens remove from the coal all the undersize that has been made in the bins.

The two degradation screens which serve in the final preparation of the No. 2 stove coal, and also the two which take care of degradation of the No. 3 chestnut coal, each measure 6x8 ft. All are of the shaker type. From the degradation screens each of these two sizes are fed onto a belt picking table, 4 ft. wide, where the coal is hand-picked before it passes over a loading boom into the railroad car.

Degraded coal is removed from the ¾x1½-in., No. 4 pea size by two

combination screen units. Each of these consists of a 4x6-ft. vibrating screen which is joined to the frame of a 4x6-ft. shaker screen. The vibrating screen is attached to the lower end of the shaker screen and removes the last trace of degraded coal which might pass over the shaker screen proper.

The broken coal which passes through all the degradation screens in the rescreening plant is carried by a flight conveyor to the bucket elevator which lifts it to the point of beginning of the rescreening process.

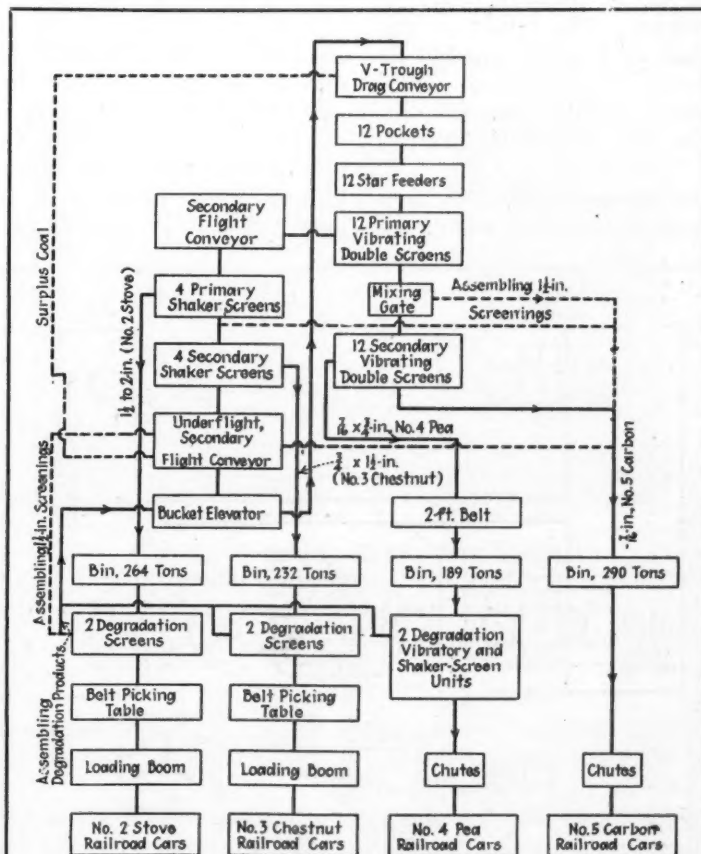
MIXING GATE BYPASSES SCREENINGS

When the preparation of 1½-in. screenings is desired a so-called mixing gate, which is located between the primary and secondary vibrating screens, is thrown into such a position that it guides directly into the No. 5 carbon-coal bin that coal which passes through the primary vibrators. The coal which passes over the primary vibrators is carried to the shaker screens. No. 3 chestnut size and the degradation products of No. 2 stove size are carried by the return run of the secondary flight conveyor to the No. 5 carbon-coal bin.

Though the screens and other equipment in the rescreening plant as a unit are of such liberal proportions as to handle conveniently about 700 tons of coal per hour, for short intervals, coal might flow through the primary trough conveyor at a greater rate than that for which the star feeders are adjusted. Should this occur at any time, the surplus coal can be transferred to the return run of the secondary flight conveyor and

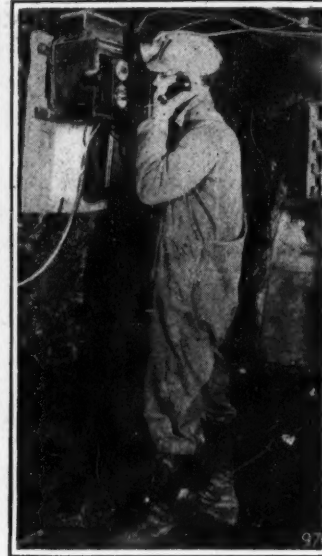
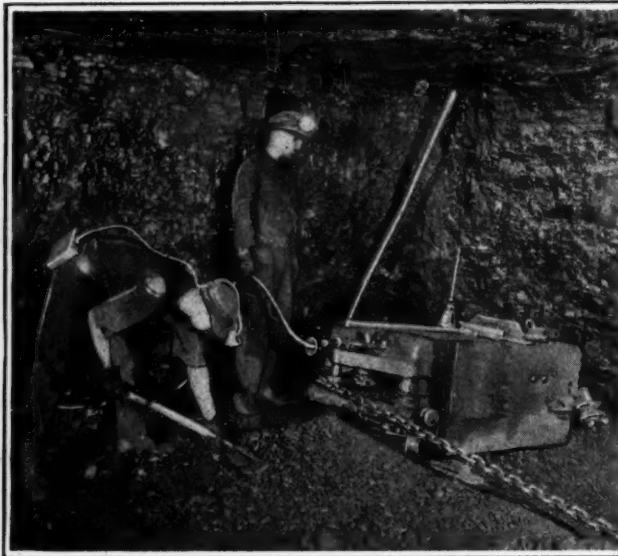
carried to the bucket elevator which will join it with the incoming coal from the main tippie. This arrangement of course would take care of momentary surges only. Should the excess flow continue for several minutes, it can be carried by the upper run of the secondary flight conveyor to the shaker screens. This emergency has never yet arisen.

Illinois, as a state, has always had fine preparation plants. In no other coal field, but the anthracite region, is the work of sizing carried so far. The market has become accustomed to a closely sized product and to coal that looks quite similar to anthracite. New Orient's preparation equipment recognizes this state of affairs. As will be noted it gives the consumer just what he wants, and as a consequence the Chicago, Wilmington and Franklin Coal Co. has had much success in maintaining and widening its market.



Process by Which Two-Inch Screenings Are Separated Into Four Sizes

This work is done in a rescreening plant. Vibrating screens separate the two larger from the two smaller sizes. The larger sizes go to shaker screens to be divided into the two bigger grades. Other vibrating screens separate the two smaller sizes. All the four sizes go to bins. The two large sizes and the larger of the two small sizes are rescreened before being taken to the cars. The two larger sizes are picked before loading. Arrangements are made for combining all products under 1½-in. diameter.



New Orient Gets Results Electrically by Having Full Voltage and Efficient Equipment

Adequate Feeders and Equally Adequate Copper Returns Prevents Low Voltage and Heating—Sufficient Inspection and Repair Men Keep Machinery In Condition—Temporary Work Where Permanence Is Desired Is Not Tolerated

NOT ALONE IN SIZE and in tonnage produced is New Orient pre-eminent. The intention was to build a big mine, not as a monument but as a means of attaining a low cost of production. This the management has achieved by continually keeping in mind the real purpose of the mammoth plant—economical operation.

A prominent feature in this successful effort to keep costs to a minimum is the carefully considered division of authority and the apportionment of men to see that the equipment is at all times in perfect repair and working at maximum capacity. Another is the adequacy of the power lines and the care taken by the use of a return cable to assure that power is not wasted by inadequate returns.

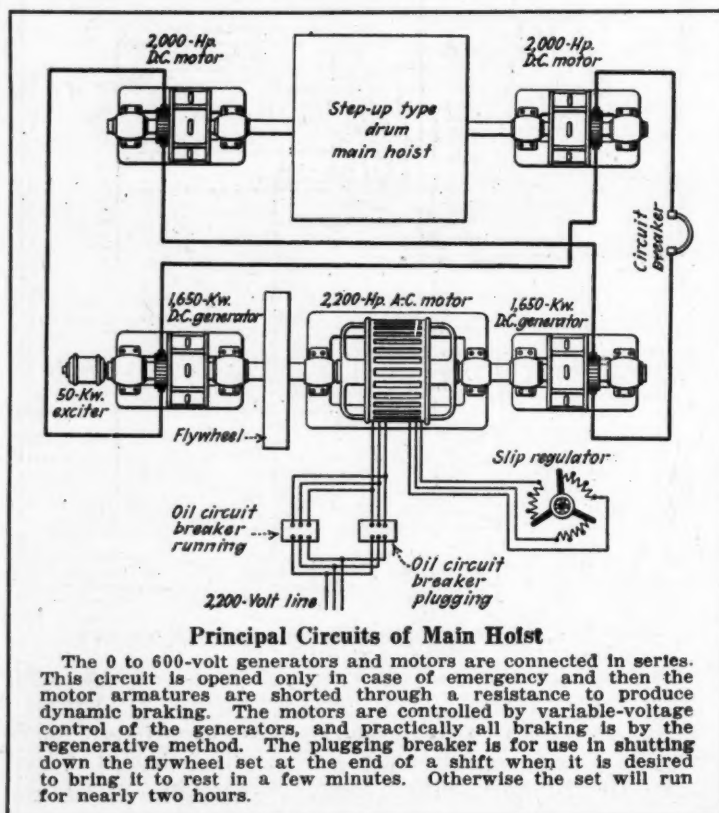
Positive lines of 1,000,000 circ.mil capacity are provided to maintain the voltage in the trolley-wire circuit at points not exceeding 500 ft. from the face. Lines of the same capacity lead from points similarly situated with regard to the face to carry the return current. Thus the needed voltage is everywhere provided; the motors give their required serv-

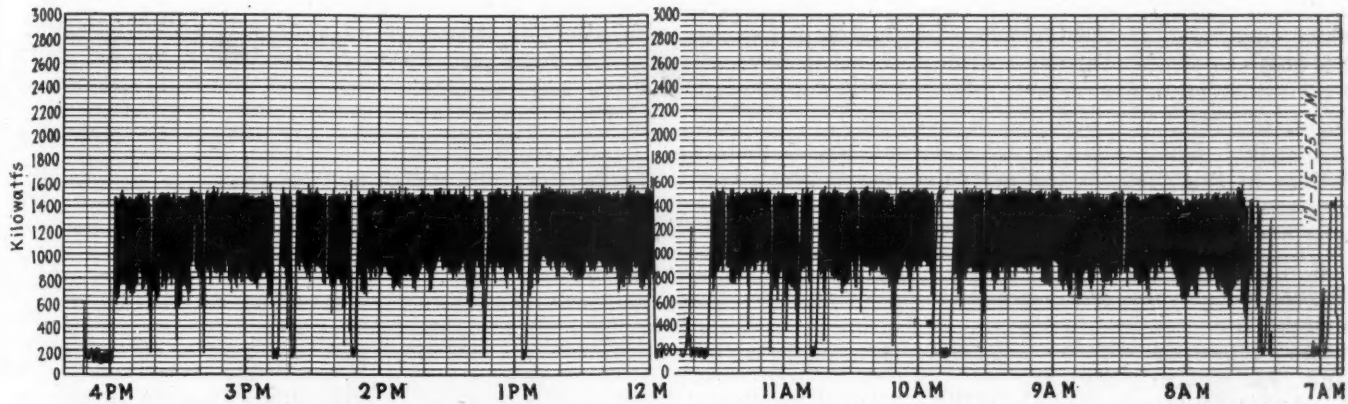
ice and do it without generating any excessive heat.

In the keeping of spare parts such economies have been made that only \$6.18 worth of inventoried spare and repair parts is kept for every ton of maximum daily production. Reading about mines whose power costs are up to 25c. per ton of output, it is refreshing to find that this mine that justly prides itself on its bigness, runs along with the meager power bill of only 3.37 kw.-hr. or 5.8c. per ton of output.

This mine has to lift its coal 500 ft. and it loads 20 per cent of it mechanically so it would be well justified in having a high power bill. True it does not pump much water, its grades are good and as it does not own its own village it has no lighting load, either for houses, entertainment buildings or streets. But the record is a good one which many mines might well emulate.

Power for operation is purchased from the Central Illinois Public Service Co. at 33,000 volts. The coal company owns its own transformer substation, which has a capacity of 6,500 kva. This consists of two banks of transformers. One of these contains three





Wattmeter Chart of Main Hoist on Day of World's Record Shaft Production

This chart is from the wattmeter connected in the 2,200-volt line supplying the motor of the flywheel set. On this day 12,823 tons were hoisted in 8 hours. Although the hoist is driven by two 2,000-hp. motors, the demand as shown by

the chart is between 800 and 1,500 kw. The hoist was designed for a cycle of 26 sec., but it was some time before the hoistmen learned to meet the requirement. They were cautious about depending on the automatic control to slow the hoist at the end

of the cycle, but found that the required speed cannot be made otherwise. The hoist has been operated at a maximum rope speed 4,200 ft. per minute. This means that the 17,000-lb. skips travel for a time at a rate of over 47 miles per hour.

1,667-kva., and the other three 500-kva. transformers. From this outdoor substation the power is distributed at 2,200 volts to both top and bottom equipment. No wires are strung overhead. The lead-covered cables leading from the transformers to the various buildings are carried in fiber ducts which, in turn, are incased in concrete. All bends, however, are made in iron conduit.

Of the surface equipment, the main hoist is the outstanding feature. This is driven by two direct-current motors each of 2,000 hp. capacity. The flywheel motor-generator set, furnishing current to these motors, is driven by a 2,200-hp. wound-rotor induction motor, two generators being mounted upon the one shaft. The hoist is provided with the Ward-Leonard control, its speed being determined by changing the generating voltage. This machine is said to be without exception the highest powered Ward-Leonard flywheel-type mine hoist in the world, metal- and diamond-mine hoists not excluded.

The flywheel of the motor-generator set weighs 45 tons. This together with the weight of the other rotating parts makes it advisable to employ the oil-pressure method for floating the shaft in its bearings when the machine is being started. When the oil pump is not in operation the starting of the set requires 3,000 kw. but only 500 kw. are needed when the pump is put in operation first.

The auxiliary hoist installed at the man-and-material shaft is normally driven by a 400-hp. induction motor. For emergency operation both a 200-hp. motor and a steam engine are provided. The only other steam-driven equipment at this mine is an engine for operating the fan in case of motor or power failure.

For generating steam two 150-hp. horizontal return-tubular boilers are provided. These are employed chiefly for steam heating the bathhouse and other build-

ings, as well as the water used in them, but both are fired the year round in order to provide emergency drive for the fan and auxiliary hoist.

Another source of power in case of emergency, but one of a capacity sufficient only for operation of the shaft pumps, is a transmission line from the Orient No. 1 power house located about three miles away. Part of the power for operation of Orient No. 1 is generated at 275 volts direct current and the rest purchased at 33,000 volts, alternating current. In case of emergency a 300-kw. motor-generator set can be run inverted and the power transmitted back over the 33,000-volt line to the New Orient transformer station.

A general idea of the other top equipment at New

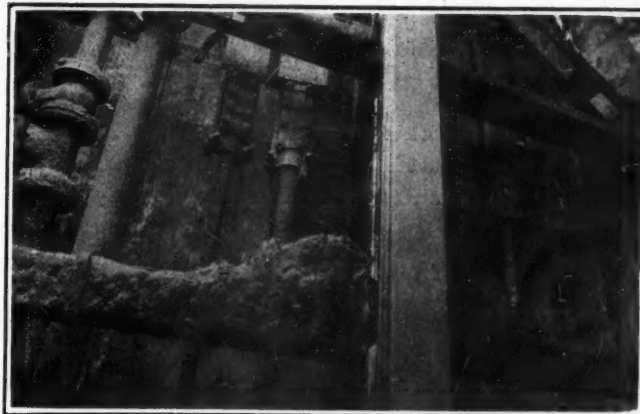
Orient may be gained from a study of Table I. No synchronous motors are used except those of the motor-generator sets in the substation and the only direct-current motors on the surface are those driving the hoist of the main shaft.

In the rescreener plant, where the small sizes coming from the main tipple are prepared, twenty-four electric vibrating screens are installed. Each of these is fitted with two vibrating magnets. The 15-cycle 110-volt current for their operation is generated by three 10-kw. motor-generator sets.

Eight more duplicate screens are now on order.

Motor loads in the main tipple and in the rescreener are each carried by a bank of three 50-kva. 2,200-to-220-volt transformers, located in these respective buildings. These transformers are not placed in vaults, but are set on the floor in screened-off corners. What dust accumulates on them is blown off periodically, whenever the motors and other equipment are cleaned.

Within the tipple, rescreener and in other dry and dusty locations standard open-type alternating-current motors are installed. In wet dirty places, on the other hand, totally inclosed motors are used A. W. Giles,



Cable Suspensions in Auxiliary Shaft

Five power cables and one 60-conductor telephone cable tie the surface and underground. All except one have varnished-cloth insulation and are leaded and armored. The exception is a 1,000,000-circ.mil negative line which is triple-braid weatherproof. The aggregate weight of the six cables is 13½ tons. Anchors at 50-ft. intervals prevent the cables from swinging but take no weight.

chief electrician of the Chicago, Wilmington & Franklin Coal Co. states that dry coal dust seems to have no harmful effect on the motors, provided it is not allowed to accumulate too long between cleanings.

One interesting detail of the stationary-motor installations at this plant is the extensive use of short belt drives employing idlers. The 300-hp. motor driving the fan, the two 50-hp. air-compressor motors and several of those actuating tippie and rescreeener equipment are thus connected.

A 20-hp. connected-load for charging lamp batteries is included in Table I. The mine is worked with closed lights exclusively, this equipment consisting of 1,350 lamps. These are stored, charged and repaired in an 18x47-ft. room. The battery-box covers and lamp headpieces bear number plates which serve to check the men into and out of the mine. Thus each man always receives the same headpiece, but this may be attached to any battery. So far the largest number of lamps and consequently men, including bosses that have ever been within the mine at any one time has been 1,108.

Underground, the electric load consists chiefly of direct-current motors, their aggregate ratings totaling 5,112 hp. as compared to a total of 190 hp. in alternating-current equipment. Table II lists the equipment making up the underground load.

Direct current is supplied to the underground operations from a single substation near the shaft bottom. Here four 2,200-to-275-volt synchronous motor-generator sets, totaling 1,400 kw. are installed. The capacity of one of these is 500 kw. and of the other three 300 kw. each. The total length of the substation is 175 ft. The central portion is 80 ft. long and 16 ft. wide, but the two end sections are only 10 ft. in width. The ceiling is 10 ft. high in the center where the switchboard is located and 7½ ft. high over the rest of the room.

Direct current leaves the substation by four separate circuits, which are interconnected within the workings. Each main circuit is controlled inside the

substation by means of an automatic restoring panel. One of these circuits feeds the trolley on the main bottom and the other three feed different sections of the mine.

Eight 1,000,000-circ.mil triple-braid, weatherproof, positive lines and a like number of bare negative conductors constitute the copper of these four circuits. The practice at this plant is to carry a 1,000,000-circ.mil return, or negative, conductor throughout the distance that each positive conductor of like size is installed. The return feeders are bonded to the tracks every 500 ft. An attempt is made to keep both the 1,000,000-circ.mil feed and return cables within 500 ft. of the faces.

At each pair of cross entries leading from the main north entry two automatic reclosing circuit breakers equipped with time clocks and night-load relays are installed. Whenever the night shift is not working, the time clocks are set to lower the overload setting of the circuit breaker as a precaution against fire. These circuit breakers are all of the tie-feeder type, but are being employed for stub-end service.

Tracks in the main haulageways, cross-entries and rooms are of 70, 60- and 30-lb. rail respectively. For the most part they are bonded with 4/0 steel-terminal electric-welded bonds. All extension and repair work is now being done with bonds applied by the copper-electrode method.

Because a large number of locomotives and mining machines have been transferred from the company's inactive mines, the standardization of these types of equipment is not as complete as might at first be expected. This will be noted on an inspection of Table II.

The value of the total stock of electrical and mechanical repair and spare parts carried for the whole plant totals approximately \$79,500. Naturally, this does not include such construction material as is kept

on hand. Based on the maximum daily production of 12,823 tons this is equivalent to \$6.18 for spare and repair parts per ton of daily output. Seeing that two

Table I—Connected Load of Motors at New Orient, Above Ground

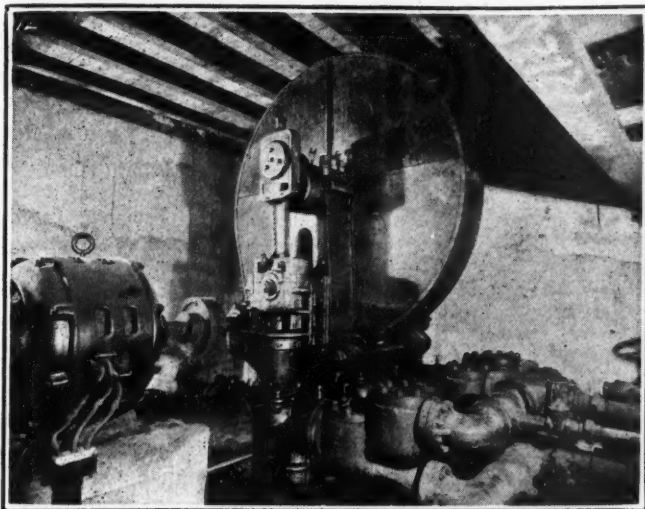
	Number of Motors	Size Range in Hp	Total Hp.
Blowers for indirect heating system of buildings.....	4	1½ to 7½	17
Auxiliary tippie.....	3	20 to 40	75
Rescreeener.....	27	1½ to 100	423
Main tippie.....	23	5 to 75	480
Auxiliary hoist.....	1	400	400
Main hoist.....	2	2,000	4,000
Mine fan.....	1	300	300
Small motors in main hoisthouse, including a 50-hp. air compressor.....	8	1 to 50	89
Shop, exclusive of heating blowers, but including a 40-hp. compressor.....	22	1 to 40	135
Lamphouse charging sets.....	4	3 to 15	25
Sandhouse.....	1	5	5
Totals.....	96		5,949

The above list does not include the following:

One 200-hp. emergency motor on auxiliary hoist.
One 2,200-hp. motor driving main-hoist flywheel motor-generator set.
One 288-hp. motor of a 200-kw. synchronous motor-generator set which is located in the auxiliary hoisthouse and which is not operated except when the underground substation is shut down.
One 25-kw. electric baking oven in the electric repair shop.

Table II—Connected Load of Motors at New Orient, Underground

Direct Current	Horsepower
Mining machines.....	1,871
43 Sullivan shortwall, 30-hp.	
21 Goodman breast, 21-hp.	
4 Jeffrey breast, 35-hp.	
Locomotives.....	2,635
2 General Electric, 13-ton, 150-hp.	
1 Jeffrey 10-ton, 150-hp.	
2 Westinghouse 10-ton, 80-hp.	
1 Iron-ton 8-ton combination	
12 General Electric 8-ton cable-reel, 7-m.p.h., 90-hp.	
15 General Electric 8-ton cable-reel, 3½-m.p.h., 45-hp.	
3 Jeffrey 6-ton cable reel	
1 General Electric 6-ton cable reel	
Shearing Machines, two Sullivan 30-hp.....	60
Loading Machines	
5 Joy 4-BU 214-hp.	
5 Joy 4-BU 25-hp.	
10 Myers-Whaley, 20-hp.	
1 combination Myers-Whaley and Joy, 20-hp.	
Portable compressors, two, 25 and 40-hp.....	65
Electric coal drills, 16 Little Giant.....	8
Rock duster.....	6
Booster fans, 57.....	10
Gathering or portable pumps.....	7.5
Total direct current.....	5,112.5
Alternating Current	
Substation ventilating fan.....	5
Pumping.....	90
Ring in auxiliary shaft, 25-hp.	
Sump near main shaft, 50-hp.	
In sump of main shaft, 15-hp.	
Stationary compressor (not used ordinarily; air for rotary dump is compressed in main hoisthouse).....	50
Car haul at bottom of main shaft.....	25
Skip-gate operation.....	20
Total alternating current.....	190
Grand total.....	5,302.5
Above does not include 2,016 hp. of synchronous motors driving direct-current generators in underground substation.	



Main Pump Room at New Orient Mine

This 6½x12-in. vertical triplex pump having a capacity of 250 gal. per min. is driven by a 50-hp. 220-volt motor of the wound-rotor type. It is controlled by time-limit automatic starter which fundamentally is a drum controller driven by a fractional-horse-power motor. A comparatively small quantity of water enters the New Orient mine.

types of loading machines are employed this figure is quite favorable. For purposes of comparison it might be stated that seven West Virginia mines chosen at random, none of which have mechanical loaders, carry an average of \$9.07 of spare and repair parts per ton of daily capacity.

Again referring to Table II it will be noted that few large locomotives are employed in this mine. At present the average length of haul is about ¾ of a mile and the maximum slightly over one mile. For this reason most of the gathering locomotives haul their trips to the shaft bottom.

As a result of careful tests conducted on both slow- and high-speed types of gathering locomotives many slow-speed units making 3½ miles per hour are used. These were found capable of gathering as many loads as high-speed units and it was shown that they accomplished it with the consumption of 35 per cent less energy.

Furthermore, from the test-meter charts it was estimated that the 5-min. demand for power was 50 per cent less with the slow-speed than with the high-speed locomotives. A third advantage of the slower-moving machines is their reduced maintenance cost. All the high-speed locomotives at present in use will be converted to slow-speed machines whenever they require a general overhauling. This will be done by installing 500-volt armatures and field windings for use on the 275-volt circuits.

Up to the present time, mining-machine, loading-machine, and locomotive repairs have been effected without

the use of an underground shop. The only facilities provided for this work underground are a temporary pit and a chain block. Any machine requiring heavy repairs is hoisted out of the mine and sent to the main shop. At present a combination locomotive-repair barn and machine shop is being constructed below ground. This will be equipped with a few machine tools, such as a lathe, drill press, power saw and the like.

Above ground the three repair shops maintained occupy a building having a ground area measuring 50x160 ft. This is divided transversely by brick walls into three connecting rooms. At one end 20 ft. is occupied by the electric shop, the next 40 ft. is taken up by the machine shop and the remaining 100 ft. by the blacksmith-and-car shop. A continuous track traverses the building lengthwise in the center and in the middle of each room a turntable is installed which connects with a transverse track that enters the building by a side door and extends the full length of the room.

In the electric shop an armature-banding machine, a dipping tank and an electric oven constitute the equipment. All armature winding is done at the mine but only factory-formed coils are used. After being wound the armatures are dipped and baked.

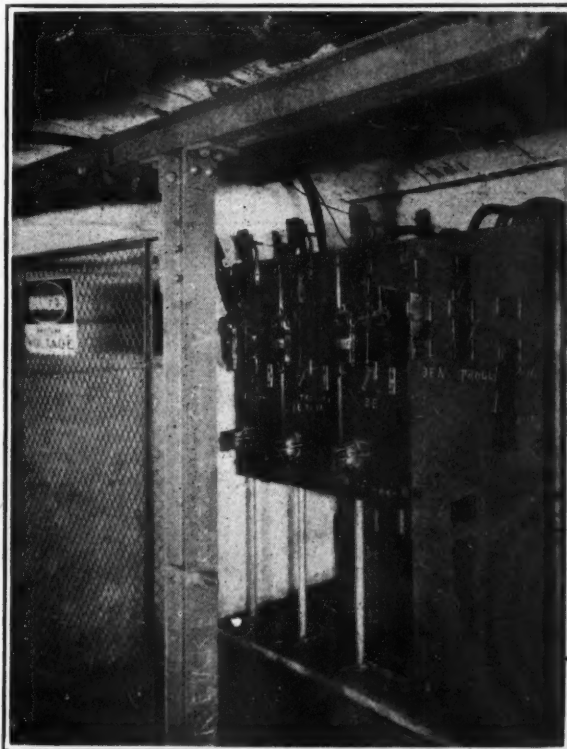
In the machine shop three lathes are installed. These are of 12-, 20- and 36-in. swing respectively. A pipe machine, grinder, milling machine, bolt threader, shaper, radial drill and traveling crane complete the list of heavy tools.

The equipment in the blacksmith shop includes a wheel press, arc welder, drill press, grinder, three forges with smoke exhausters, power hammer, power saw, air compressor, portable acetylene generator, and two bit sharpeners equipped with automatic heating furnaces. These latter are oil-fired.

In all thirty-four men are employed in electrical and mechanical maintenance work. The chief mine electrician, whose jurisdiction covers the top work only, has four men under him, who make shop repairs including armature winding. They also "shoot trouble" on the surface equipment.

The head machinist reports to the top foreman and has three men under his charge. Their work is chiefly confined to the shop itself. In the blacksmith-and-car shop eight men are employed. Bit-sharpening keeps four of these busy. The shaker screens and other tippie equipment are oiled, inspected and repaired by two men who spend all their time on this job.

The underground crew is divided into four gangs, six men handle the repair of loading machines, four tend the mining machines, three repair locomotives and do general wiring and two are kept busy at bonding. Repairs to



Reclosing Circuit Breaker Station

At each pair of cross entries automatic reclosing circuit breakers control the branch feeders. The breakers are located in concreted rooms with one side open but protected by a wire fence. The station farthest out contains three breakers, one of which controls the main haulage circuit beyond that point.

the loading machines, mining machines and locomotives is directed by a boss who has charge of each of these types of equipment. Most of the bonding now done is extension work. The motormen, machine runners and repairmen report any defective bonds they may discover. This is the chief source of such information.

Before passing to a discussion of power costs and data, the electrical distribution from the top to the underground substation should be briefly considered. All telephone and power cables entering the mine are suspended in the auxiliary shaft which is 489 ft. deep. Six cables are provided. These have a total weight of 13½ tons. To prevent them from swinging they are clamped loosely to the sides of the shaft at 50-ft. intervals, but they are supported solely by homemade clamps at the top of the shaft.

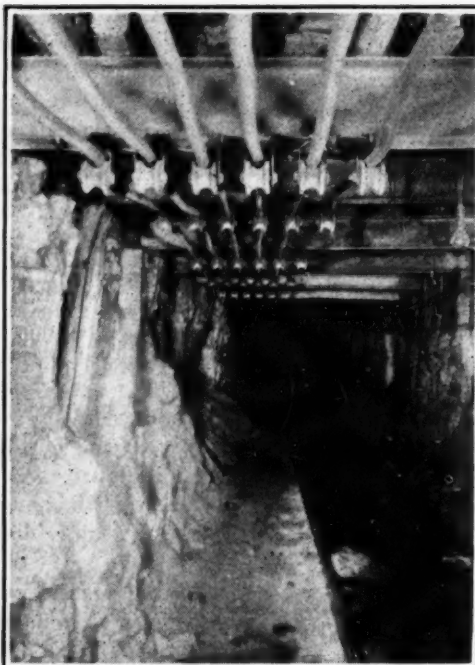
All cables installed in this shaft except the 1,000,000-circ.mil direct-current negative line, which has a triple-braid weatherproof covering, have varnished cloth insulation and are incased in lead sheathing and metal armor. Two 2,200-volt cables, in parallel, feed the underground substation and main-bottom motors. One of these is a 4/0 conductor and the other is of 400,000-circ.mil cross-section.

SUBSTATION KEEPS SUNDAY REST

An alternating-current 1/0-cable carrying 220 volts feeds the ring pump. Pairing with the 275-volt negative cable is a 1,000,000-circ.mil positive cable connecting a 200-kw. motor-generator set in the auxiliary hoist house with the underground substation. Power may be transmitted in either direction over this cable as occasion demands. Thus on Sundays and holidays the underground substation is shut down, and direct-current is supplied to the mine from the set on the surface.

The telephone cable contains sixty conductors, only a few of which are now used. On the main bottom underground, three automatic telephones connect with the 36-line "Select-O-Phone" system of the top works. All other telephones within the mine are of the ordinary magneto-type with no provision made for connection to the outside system.

Cables extending from the bottom of the auxiliary shaft to the underground substation, a distance of 750 ft., are lead-covered and carried in conduits laid below the mine floor. The duct consists of eight 4-in. fiber conduits spaced 1½ in. apart and laid on concrete. A manhole is installed in the center of the run.



Feeders from Underground Station

These positive lines feed the north section of the mine. The standard size feeder cable is 1,000,000-circ.mil. Regardless of tracks there is a negative of the same size for each positive. Feeders are kept extended to within 500 ft. of the face, and negatives are bonded to the track every 500 ft.

20,000 kw.-hr., 1.7c.; next 475,000 kw.-hr., 1.3c.; next 1,000,000 kw.-hr., 1.1c.

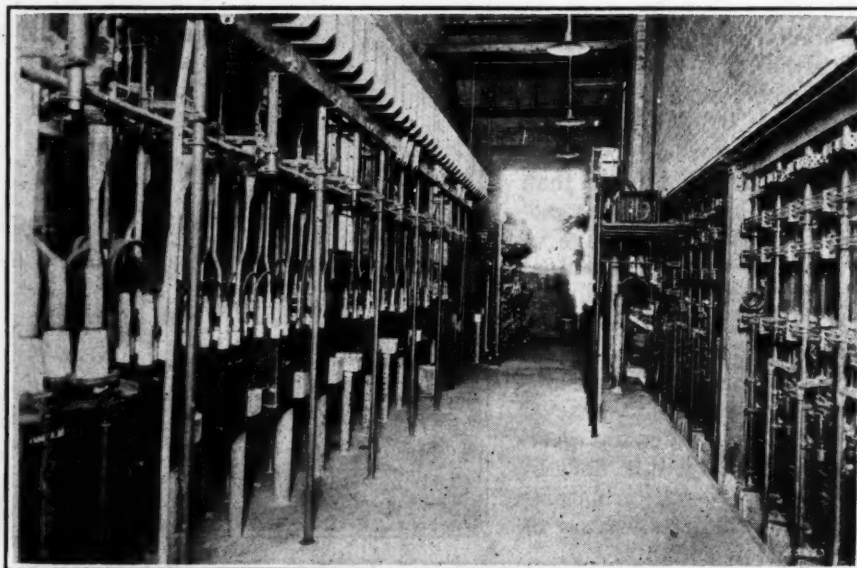
A demand reading higher than that shown in the previous month's bill establishes the demand for the current month and for the next 11 months unless another still higher reading is registered. The demand during December, 1925, when the record was hoisted, amounted to 3,125 kw. This corresponds to 4.1 tons per day per kilowatt of demand. During March, 1926, the month covered by Table III, the maximum power requirement was 3,004 kw. and the average daily production 8,568 tons. This figures 3.84 tons per day per kilowatt of demand.

These figures are quite favorable considering that

Monthly power bills amounting to approximately \$13,000 attest to the importance of this cost item at New Orient. Current consumption is metered at six points, the individual readings serving to show where power is being consumed. The sum of these readings provides a fairly close check on the accuracy of the power company's meter.

Distribution of power consumption for the month of March, 1926, is shown in Table III. During this month the mine produced 231,500 tons of coal. Thus 3.37 kw.-hr. were consumed per ton of production, the cost being 5.8c. per ton or 1.69c. per kw.-hr.

Power demand is determined by averaging the three highest 5-min. readings occurring during the month as indicated by the chart of a "Printometer." The rate is \$1.85 per kw. per month for the first 2,000 kw. of demand and \$1.67 for all in excess of that figure. Energy rates are as follows: First 2,000 kw.-hr., 4c.; next 3,000 kw.-hr., 3c.; next



Back of the Main Distribution Board in Auxiliary Hoist House

From this point to surface and underground radiate the feeders which supply the load of close to 4,000 kw. At the right is the 17-panel dead-front switchboard which forms the lower portion of a partition wall and faces the hoist room. At the left are the oil switches and above them the disconnect switches of the respective panels.

approximately 20 per cent of the coal is loaded by machine and that all of it must be hoisted 500 ft. The 5-min. demand of the main hoist alone is approximately 1,200 kw. Although this machine is equipped with two 2,000-hp. motors, the fluctuation in demand during continuous hoisting as indicated by a graphic meter fitted with a motor-driven pen, is held between 800 and 1,500 kw. by the action of the flywheel and slip regulator. After this flywheel has been brought up to speed the no-load demand of the set lies between 150 and 200 kw.

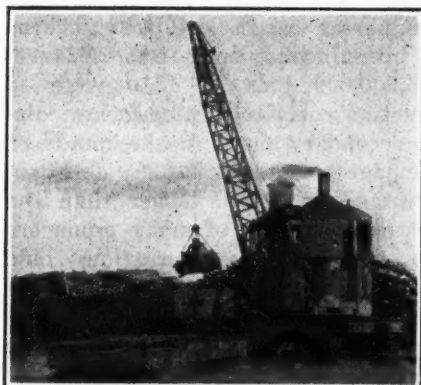
The foregoing description of equipment and methods of transmission covers the electrical and mechanical phases of New Orient's operation today. When production has been still further increased, when the inside hauls have become longer, and after the change is made to 100 per cent mechanical loading—which is sure to occur—this mine will provide data of renewed interest. Beyond doubt New Orient, the giant and pace-setter of the coal mines of the world today, will be a leader among the coal operations of this country for many years to come.

Table III—Electric Power Distribution at New Orient During March

	Kw.-Hr.	Kw.-Hr. Per Ton	Per Cent of Total Power
Total purchased for all uses.....	779,000	3.37	
Main hoist.....	212,100	0.918	27
Auxiliary hoist.....	22,600	0.098	2.9
Main tippie.....	22,000	0.095	2.8
Rescreener.....	20,200	0.087	2.7
Direct current—chiefly used in cutting, drilling, shearing, loading, hauling and auxiliary ventilation	324,100	1.40	41
Main fan.....	158,000	0.685	20
Miscellaneous—includes auxiliary tippie, ring pump, shops, heating blowers, lamphouse and so on	26,300	0.113	3.4
Total.....			99.8

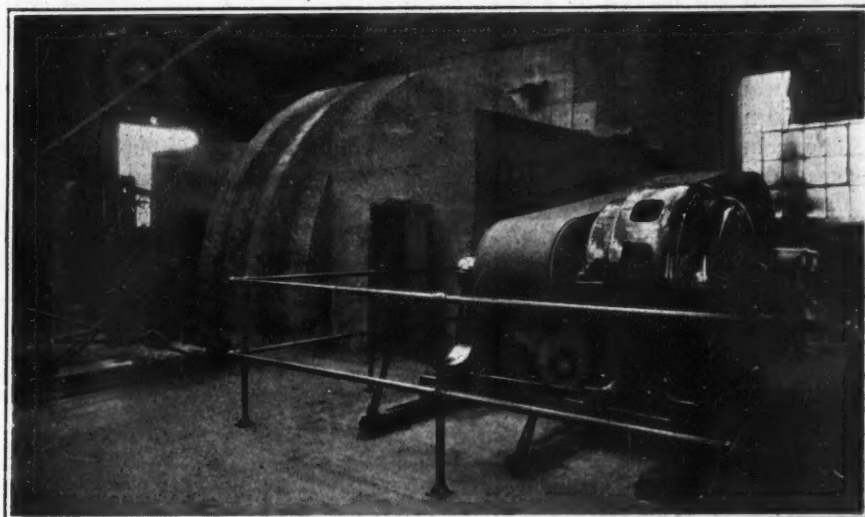
The tonnage during March was 231,500, an average of 8,568 for each of the 27 working days.

In calculating the kilowatt-hours per ton of the main hoist, that coal hoisted through the auxiliary shaft was not taken into account. This coal, hoisted for inspection and dockage, amounted to about 11,000 tons during the month.



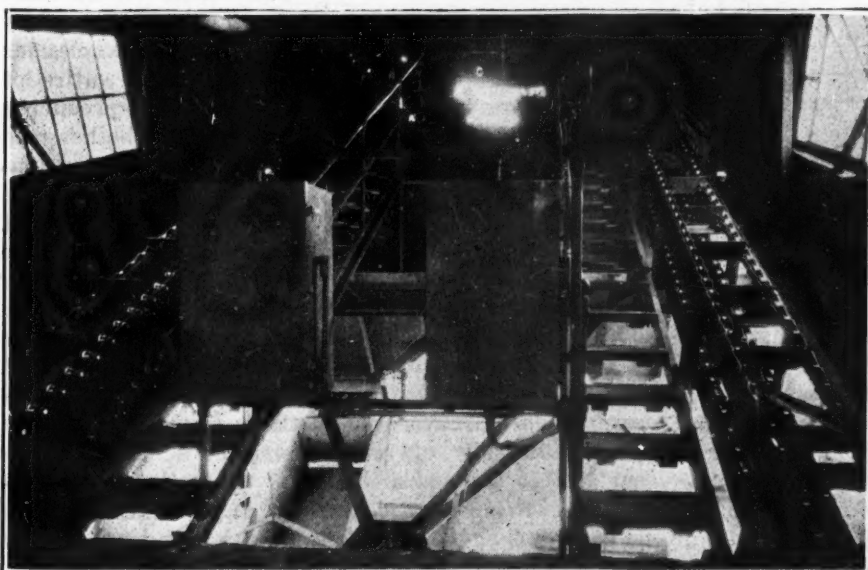
Locomotive Crane at New Orient Unloading Mine Refuse

Large areas of low-lying land stretch northward from New Orient mine, West Frankfort, Ill. Some of these swampy lands are being filled with the rock and picking-table refuse brought in by railroad cars from the mine tippie. For this purpose the locomotive crane fitted with clam shell grab bucket is excellently adapted. Not only can such a machine unload a car but it can shift it to the desired point.



Main Ventilating Fan at New Orient in Auxiliary Hoist House

Reversible fan with double inlet, intended primarily to be used as a pressure unit. It measures 12x5 ft. and has a capacity of 250,000 cu.ft. per minute. A steam standby is provided in case the electric current should fail. Part of the equipment of New Orient mine, West Frankfort, Ill.



Drag Conveyors Which Take Waste from Picking Tables at New Orient

The refuse from picking is raised by these conveyors into a bin located over one of the railroad tracks for loading into railroad cars. These latter are run out into the flat land and emptied by the locomotive crane. New Orient is the mammoth plant of the Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill.



Putting on Street Clothes

At New Orient mine, of the Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill., many of the men come in automobiles, so it is fortunate they have a bathhouse in which they can dress for the return home thus keeping the "machine" clean.

New Orient Merchandising Program Built Upon Confidence, Co-operation and Service

Direct Control of Distribution and Prices Gives C. W. & F. Coal Co. Opportunity to Work Out Comprehensive Policy of Close Contacts And Co-operation with Retailers in Marketing Coal to Consumers

By Sydney A. Hale

Associate Editor, *Coal Age*

THE MERCHANDISING STORY of New Orient and the associated mines of the Chicago, Wilmington & Franklin Coal Co. is a record of achievement no less noteworthy than the engineering story told in detail elsewhere in this issue of *Coal Age*. In a very real sense one complements the other. The production-engineering skill which went into the design and successful operation of the physical plant of the world's largest bituminous mine would be labor lost were it not backed by a sales organization capable of carrying on the work of distribution. Both have been the result of careful planning, slow growth and the application of sound principles to problems of operation and management.

The company's merchandising policy which makes large-scale production economically, as well as physically, possible is, to quote the language of one of the executives of the C. W. & F., "simply to do the selling with its own organization direct to the legitimate retail coal dealer and to the buyers of steam coal in carload lots when that coal is used for steam producing and other industrial purposes. There is no strategy employed other than the application of the principle of hard and intensive work by the whole organization."

Fundamentally there is nothing novel in this policy. It states an ideal to which the majority of commercial coal producers will willingly subscribe. But it is the realization of the ideal that counts. Realization involves not only a steadfast adherence to the central plan, but a vast web of detail to carry that plan into execution. The difficulties, even under the most favorable circumstances and conditions, are of no mean order. Acute competitive situations of today must be reckoned with; inertia having its roots in past policies and practices must be overcome. Direct contact must be established with the retail distributor and with the industrial consumers and those contacts must be made as valuable to the buyer as they are to the seller.

When the present management took over the operation of the properties, it became the successor in interest to an organization that had its beginnings in the Civil War era when Eastern capital and Western

enterprise joined in the development of the northern Illinois field. As the trend of production moved south, the former management moved with it and plunged heavily into Franklin County with Orient No. 1. Like many others, however, the old management did not sense the growing importance of controlled distribution as a necessary factor in successful operation.

For many years, the rapid growth in population and the industrial expansion of the Middle West carried the bituminous coal industry with them. There were ups and downs, to be sure, panics and strikes, but the gains which raised Illinois bituminous output from 2,624,000 tons in 1870 to 45,900,000 tons in 1910 were so irresistible and production costs relatively so low, distribution occupied a secondary place in the minds of many operators. Tonnage was the great *desideratum*, and the mine superintendent bulked larger than the sales manager. Sales organizations of many producers were sketchy affairs. If these skeleton creations could

not maintain contacts with the carload consumers and place all the tonnage direct, there was always the middleman eager to serve with his highly specialized knowledge of market conditions, consumer requirements and close personal acquaintance with buyers large and small. Why seek out ten buyers to place 100 cars if a wholesaler would take the entire lot and save the producing company the bothersome details was the reasoning of many operators.

When the present management of the

C. W. & F. assumed control, between sixty and seventy per cent of the annual output—then approximating 800,000 tons—was sold through jobbers. Today only an occasional car reaches the consumer through that channel and this particular company is not faced, as some producers have been in times of stress, with the painful necessity of repurchasing at advanced prices coal sold to jobbers and needed to apply on the producer's own consumer contracts. In the meantime, the company has added materially to its productive capacity so that the annual output is around 4,500,000 tons.

The elimination of the middleman was undertaken in no spirit of hostility, but because the company had certain definite objectives which it felt could not be

ORIENT COAL

Telephone No. _____

Date	Inquiries		Orders	Tons	Est. Date of Receipt	Reported	Packed	REMARKS
	M	T						
1								
2								
3								
4								
5								
6								
7								
8								
Total								

Fig. 1—Making Checking Results Easy

In order to make its co-operative advertising campaign most effective, the C. W. & F. furnishes its dealers with record cards to keep track of inquiries, orders and the pulling power of each mailing unit.

attained with indirect selling. Its investment in the intervening years had increased enormously. The proper protection of that investment, in the opinion of the executives of the company, depended upon direct control of its markets and direct contact with carload consumers.

With direct control of distribution goes direct control of price. This, in turn, makes possible the establishment of a definite price policy. It also paves the way for the adoption of a more carefully planned distribution program. With direct contact with the carload consumers, the producing company is in a better position to gauge consumer requirements and to study the opportunities for leveling the curve of seasonal demand. Conditions during the last few years have been so unusual that this last objective has been only imperfectly realized, but progress towards that goal continues.

Something more than the mere desire to control the distribution of its output is necessary if a producer is to bridge the transition from indirect to direct selling with profit and safety. Franklin County coal is marketed in eighteen states, reaching Alabama and Texas on the south and Minnesota and the Dakotas on the north. The area of greatest distribution embraces the states of Illinois, Wisconsin, Minnesota, Iowa, Missouri and Nebraska. This territory is the competitive cock-pit of the bituminous industry. It is a rich "no man's land" over which the coal interests of the Appalachian Region and of the Middle West wage endless battle for commercial supremacy, with the producers of the Southwest and the Mountain States disputing the claims of both main contestants in sections of this territory. Internal rivalries between companies in the same producing districts are as bitter and unrelenting as the warfare between the Eastern and the Western bituminous areas as a whole. In the case of those producing companies that have elected to maintain their own sales organizations, the struggle is complicated further by the conflict with jobbers driven to concentrating sales efforts on Eastern coals and Illinois and Indiana fuel from other operations.

To maintain its contact with the markets served by southern Illinois and by the central district of the same

state, in which it also has two mines, the C. W. & F. company has a force of thirty-four salesmen. Of this number, thirty spend the greater part of their time on the road. Branch sales offices have been established at St. Louis, Omaha and Minneapolis. To further cement its relations with the steam trade, which absorbs fifty to sixty per cent of the company's output on annual contracts, a corps of combustion engineers is employed. These experts, who work on a full-time basis, advise with consumers on the most efficient utilization of fuel.

Outside of state and municipal business, little coal

is sold in the Middle West on analysis specifications. Producers are convinced that actual evaporation results in regular plant operation are superior to the reports of the chemical laboratory, where so much depends upon the manner in which the sample has been taken. In this opinion the majority of steam-coal buyers agree. They have found that knowledge of the producing company and of the mine from which the coal is shipped are safer guides in ordinary day-to-day dealings than the findings of the chemists. Probably no two samples will be identical in analysis, but these minor fluctuations are wiped out in the averaging of the results obtained in firing under normal working conditions in the plant of the steam consumer.

The combustion engineer, who has become a fixture on the staff of many of the larger producing companies, can step in and give the steam consumer the practical help which the condition of his physical

INSTRUCTIONS

This card is furnished for the purpose of keeping a complete record of the actual results secured from advertising and sales promotion work directed to the prospective customer whose name appears on the front.

Telephone Numbers:—

The prospect's telephone number should be entered in the space provided.

Inquiries:—M. T.

When inquiries are received by mail or telephone from any of the mailing pieces from one to eight, a check should be made in the mail or telephone columns, to show which message brought the inquiry.

Orders:—

As orders are received the date of the order should be entered in this order column against the mailing unit responsible for the order.

Tons:—

The tonnage of each order should be entered in this column, in line with the date of the order and the mailing piece responsible for the order.

Estimated date of Re-Order:—

Unless a full year's supply is purchased at one time, the estimated date on which the customer should again be in the market for coal should be entered in line with the tonnage ordered and mailing piece responsible for the order.

Reported:—

When an order, with estimated date of re-order, is reported for the follow up campaign, record this action by a checkmark in the reported column.

Phoned:—

All customers should be phoned a few days before the estimated date of re-order, and this phone call should be recorded in the phoned column.

Remarks:—

This column is provided for special remarks regarding each prospect or customer, or for recording miscellaneous business secured as the result of your advertising.

At the start of the campaign all of these cards should be arranged alphabetically by prospects' names, and as inquiries are received, the card should be pulled, checked and moved into an interested prospect file.

As orders are received, the cards should be transferred to a customer file, arranged according to estimated re-order dates and this file should be referred to daily, to avoid neglecting the making of follow up telephone calls.

It will pay you, and pay you big, to follow up every prospect and customer intensively, personally, and this record file will help you do it.

CHICAGO, WILMINGTON & FRANKLIN COAL CO.

Fig. 2—Instructions with a Punch

This figure shows the reverse side of the record card illustrated in Fig. 1 and is a silent prod to close follow-up work.

plant, engine room personnel and steam load demand. He can determine whether failure to obtain desired results is due to faulty equipment, incorrect firing methods or to the preparation and quality of the coal itself. He is an essential part of a modern merchandising program and for that reason is considered an essential part of the C. W. & F. merchandising service.

Because such a large percentage of the industrial coal in the Middle West is purchased on an annual contract basis, the competition for this particular class of business is concentrated into comparatively brief periods of the year. Once the contract has been signed, the problem of selling ceases. The merchandising problem then becomes one of service which will induce the

steam-coal buyer to renew his contract upon its expiration. With the combustion engineer ready at all times to give practical technical advice and the salesman maintaining personal contact, disagreements and dissatisfaction can be smoothed out before they have persisted long enough to become an issue to threaten friendly relations.

In the retail trade, the merchandising problem is more complex. Contract arrangements, where they exist, usually are on a different basis. There is a continuous struggle by competitive producers to persuade the retailer to push another coal and the retailer himself is continually trying to sell the coal he has bought in competition with the same or different coals purchased by other retailers serving his community. The retailer's stock in trade is consumer satisfaction. Primarily, he is much more interested in giving the consumer what that individual wants than in buying what a particular producer wants to sell.

This is a fundamental distinction which all coal producers have not always recognized. The distinction, however, is thoroughly appreciated by the C. W. & F. management. For several years, time, thought and money have been freely expended in an intensive campaign to create a strong consumer demand for C. W. & F. coal and to make the retail dealer franchise a thing of real value. The keynote of this campaign has been the creation of confidence between buyer and seller which makes possible the co-operation needed to carry out a successful merchandising program.

"Unless we have confidence in you and you in us," said A. J. Maloney, vice-president in charge of sales, in telling the retailers of the company's 1926 sales program, "true co-operation between us is impossible. We must believe in each other. You must believe that we are producing and preparing for you the very best coal it is possible to find. You must believe in our honesty, in our sincerity and that we are dominated in our every business action

by an earnest desire to see you succeed, make money and build up a thoroughly satisfied clientele through the distribution of Orient coal.

"We must believe in your honesty, your integrity, your loyalty, and your genuine interest in everything

pertaining to the production and distribution of Orient. If we both believe in each other, co-operation will follow as a matter of course and our mutually greater progress and greater profit is bound to result, because confidence and co-operation create sound business."

Co-operation—in the abstract—is a shibboleth of modern business. The test of the sincerity of protestations of devotion to the cause of co-operation lies in the practical steps taken to make the principle effective. The C. W. & F. organization has supported its preaching with practice which includes the formulation of a merchandising program second to none evolved in the coal industry and worthy of ranking with the best devised in other lines of business where general progress in modern merchandising has been much more rapid than in the coal trade.

The C. W. & F. Coal Co. has been a consistent believer in the power of advertising. The preparation of copy has not been the spare-time plaything of some junior in the ranks whose status is still undefined. On the contrary, it has engaged the serious attention of men in the organization like Mr. Harrington and Mr. Maloney. The services of experienced copy writers have been employed. To give the copy the proper coal flavor, the executives have seen to it that the advertising man knows his subject. One of the first agencies employed in the preparation of copy was headed up by a man who had worked as a coal digger in Illinois in his younger days. Incidentally, this same agency still handles part of the C. W. & F. copy.

When the company broke away from the indirect selling, individualization of the producing organization in the minds of its consumer customers naturally followed. With it also came direct responsibility to the carload

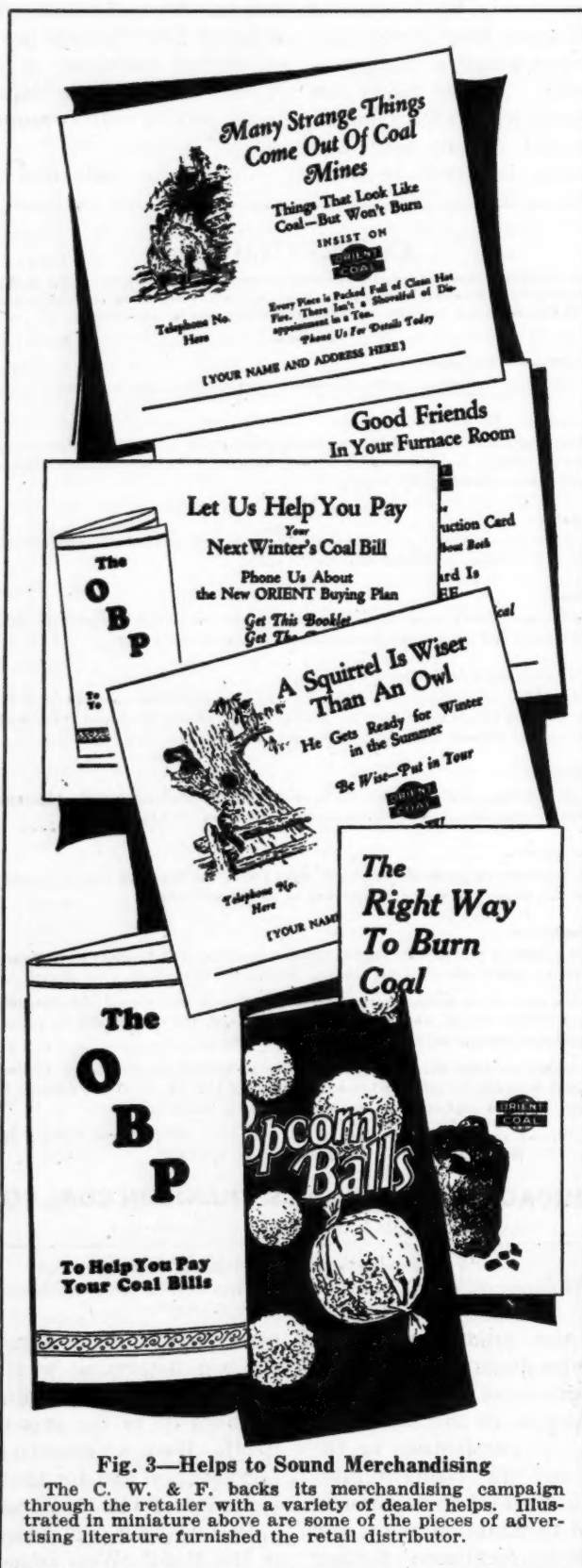


Fig. 3—Helps to Sound Merchandising

The C. W. & F. backs its merchandising campaign through the retailer with a variety of dealer helps. Illustrated in miniature above are some of the pieces of advertising literature furnished the retail distributor.

ing, individualization of the producing organization in the minds of its consumer customers naturally followed. With it also came direct responsibility to the carload

buyer for the quality and preparation of the product sold. How well that responsibility is being discharged has been set out in the articles in this issue on the engineering and operating methods of New Orient. But individualization has been carried a step further. The different coals mined have been given a sharper character and Orient—a trade-marked name—has been the standard bearer of quality and service.

Through liberal, continuous use of space in the publications serving the retail distributors, the name of Orient and the dependability of the company back of it have been impressed upon the consciousness of the retail coal merchant. Less has been done in the promotion of steam coal through magazine advertising, largely because the company has not been able to convince itself that there were mediums with the proper coverage in the industrial field. Direct advertising, therefore, has been compelled to bear most of the steam-coal load.

WORKS THROUGH RETAILER

In the creation of a consumer demand for Orient coal, the retail distributor has been the channel through which most of the publicity employed has been directed. A little general advertising has been used, but the producer has found it more satisfactory to establish consumer contacts in direct partnership with the retail distributors. Truck signs, window signs, pennant load signs, movie slides and special folders and booklets are available without cost to the dealers who will make them part of their selling campaign. Advertising copy and electros for publication in local newspapers also form part of the advertising service. Where local conditions make it advisable, the producer will have special advertising copy prepared.

Some of the special booklets are elaborate, multi-color printing jobs. Several years ago, the company made a direct appeal to the younger generation and through the children to the parents with a booklet entitled "The Story of a Piece of Orient." This told, in simple language and fairy-tale illustrations, the story of the origin of coal. Demand for this book and a subsequent production, "The Story of Fire," proved so great that parts of both have been combined into a new book entitled "The Story of Coal," which will be published later.

Another volume, "The O. B. P." outlines a plan for consumer buying not unlike the Macy D. A. (Depositor's Account) scheme in one of the big New York department stores and the Ford deposit plan for building up a fund to purchase an automobile. The O. B. P. suggests that the householder make small monthly deposits with the retailer during the early months of the year to build up a fund which will take care of the cost of his coal when delivery is wanted. Under this plan, which is a variation of the "coal club" idea, the retailer pays the consumer six per cent interest on his money. Demand for this booklet also has been heavy.

HOW CAMPAIGN IS PLANNED

For the 1926 co-operative campaign, the company worked out a series of eight mailing units to be sent to the customers and prospective customers of the retail distributors, one a month, beginning May 1. Child interest is retained in these units by a number of colored cutouts showing prehistoric beasts. The theme of the first message to the consumer was "more heat for less money." The June message, different in size

and make-up, urged early buying. The July unit, restated the arguments of the earlier messages and introduced the O. B. P. idea to the householder. The August unit was a cumulative drive for new business. Next month an appeal will be made to consumers who have not used Orient, but who are dissatisfied with the fuel they are burning. On Nov. 1 the list will be told how to burn Orient. The last unit in the series, to be mailed Dec. 1, "will present a direct invitation to round out the winter with a supply of Orient and thus make an actual furnace room test" of the coal.

NOTHING LEFT TO CHANCE

A good general leaves nothing to chance. As far as foresight and planning could do it, the C. W. & F. has left nothing to chance in working out its co-operative sales program. All the details in connection with mailing out the various units (which, of course, all carry the imprint of the individual retail distributor) are handled by the producer. The retailer's part in this work consists in furnishing the company with a list of his customers and prospects, for all of which the dealer pays only a small part of the total cost.

In order, however, that both may derive the greatest possible benefit from the campaign, the retailer is furnished with record cards which enable him to follow up his prospects and to check the drawing power of each mailing unit. These cards, 6x4 in. in size, provide space for the name, address and telephone number of the prospect and details of the coal orders placed. Figs. 1 and 2 show the card. The detailed instructions (Fig. 2) are themselves a prod to easy-going distributors. Retailers are urged to make every home owner in their community a prospect. Included in this list, the company points out, should be every good customer already on the dealer's books. "Too often we neglect our good customers. We take their business for granted and overlook the fact that our customers are our competitors' prospects. Let them know that you appreciate their patronage and are particularly anxious to continue serving them satisfactorily."

CAN PLAN FOR FUTURE

By establishing a merchandising program which wins and holds business, the producing company is able to make its price and distribution control effective. It can plan its business for the future. It has assured outlets and is not at the mercy of every minor fluctuation in the open market.

In its sales relations with the retail distributors it has built up an understanding akin to that existing between the large anthracite companies and their retail customers. Few contracts name a definite price. Few, because of the exigencies of the retail business, provide for shipments in definite monthly allotments. One of the objectives of the merchandising program, however, is to make it possible for the retailer to flatten out the seasonal curve in his business and in the measure that that is done, the producer too will gain. The ordinary retail agreement with the C. W. & F. makes provision for an estimated annual tonnage to be shipped as mutually convenient at price current at time of shipment. Inasmuch as the producer in effect holds itself out to supply the retailer with coal on the latter's demand, it feels that it is only fair that the price be left open, with the tacit understanding that that price will advance as the season grows older. Most retailers are ready to concede that this is a fair arrangement.

Coal Men You Should Know

George B. Harrington

WHEN NEW ORIENT several months ago established a record for a single day's production which has never been approached by any other bituminous mine in the world, the question on every coal operating official's lips was: "How was it done?" Already an object of interest because of its size and the superficially bold departures from routine practice in design and equipment, New Orient immediately won fresh attention because of its performance.

The secret of the success of New Orient is not the perfection of any one operating unit, but the harmonious co-ordination of all units into a smoothly running whole. It is the old story of organization—an organization made possible by the engineering ability and the personality of the chief executive of the operating company.

New Orient is the conception of George Bates Harrington, president of the Chicago, Wilmington & Franklin Coal Co. The idea was his, and most of the plans for the construction and development were the work of his hands as well as his brain. At the office, at home, in the field and on the train, he was busy for months with pencil and paper giving his creation reality. A graduate engineer, he had not forgotten how to use a drafting board.

This does not mean that the creator of New Orient did not take counsel of his associates. Mr. Harrington would be the first to deny, with all the vehemence of a vigorous personality, that New Orient was a "one man" job or that his conception of leadership was the type that glories in splendid—and usually futile—isolation. On the contrary, the president of the Chicago, Wilmington & Franklin Coal Co. is insistent that much of the success which has attended New Orient is due to the fact that every detail in connection with its planning and construction was threshed out in conference and wisdom was sought in a multitude of opinion. But the final verdict was his. Upon him rested the responsibility of seeing that no change was made which might detract from the ideal of a co-ordinated whole.

Mr. Harrington was born in Wilmington, Del., on Feb. 11, 1881. His early education was received in the local Friends School in that city. In 1894, he matriculated at St. Johns, Manlius, N. Y. After completing his preparatory school course he entered Princeton University, from which he graduated with a B. S. degree

in 1902. He then went to the Massachusetts Institute of Technology, where he specialized in mining engineering.

His first opportunity to put his technical training into practice came in the metal mines of Mexico and western United States, where he learned the fundamentals of mine operation and management by actual experience. While so engaged, he became connected with Stone & Webster, making many reports for them on their various public utility and mining interests in the West.

When the Stone & Webster organization was asked to take over the management of the Chicago, Wilmington & Vermilion Coal Co., then in financial difficulties, Mr. Harrington was called upon to make an examination of the properties of the company. A little later he was appointed general manager and when the re-organization of the properties into the Chicago, Wilmington & Franklin Coal Co. had been completed, he was elected president of the new company.

Under his direction the organization has become one of the outstanding successes in the Central Competitive Field. To his technical skill he has added a

personality which gives him real command of the human element in the operation of the company. Because he has a genuine affection for his fellow men, Mr. Harrington has built up a loyal, hard-working personnel, fashioned largely out of the ranks of the old C. W. & V. Changes in the C. W. & F. family have been few; most of them have been promotions.

This spirit of loyalty is not confined to the executives and white-collar workers. It reaches down to the mines, where every employee is sold on the company and its management. It is because of this spirit that both Orient No. 1 and New Orient have been able to make so many production records. Let another mine threaten these records and every worker is on his toes to show C. W. & F. dips its colors to no competitor.

Mr. Harrington takes a keen interest, not only in his own company and its men, but in the advancement of mining generally. He is a member of the A. I. M. E. and the American Mining Congress. He was a member of the Bituminous Operators Special Committee which appeared before the U. S. Coal Commission and is a vice-president and director of the National Coal Association.



George B. Harrington



News Of the Industry



Mine Owners Now Block Settlement Of British Strike, Says Churchill; Cook in More Conciliatory Mood

A surprising turn in the British coal strike situation took place Sept. 6 when Winston Churchill, Chancellor of the Exchequer, on behalf of the Cabinet, charged that it is the mine owners who are now blocking settlement. The strike is now in its nineteenth week. When the operators refused to agree to discuss a national settlement with the miners Mr. Churchill retorted that the government would never have passed the eight-hour bill had the Ministers known the owners would take such a stand.

A. J. Cook, secretary of the Miners' Federation, sent a letter to Mr. Churchill, on Sept. 3, stating that they were prepared to enter into negotiations for the new national agreement, with a view to a reduction of the labor costs in the mines, to meet the immediate necessities of the industry.

The government took the view that the basis of this communication was broad enough to attempt to secure a renewal of negotiations. The government accordingly invited the Mining Association, which represents the coal owners, to resume negotiations.

Cook Makes Concessions

Secretary Cook's letter, it was thought, represented in its inferences a substantial concession by the men. The miners are understood now to be prepared not only to discuss a reorganization of the industry and reduction of wages, but a lengthening of hours as well. It is said they have also given up all hope of a further state subsidy.

The coal owners told Mr. Churchill plainly earlier in the week that the district associations of the owners had definitely withdrawn from the Mining Association its power to negotiate any national agreement.

The owners' spokesman on Sunday emphatically reaffirmed their unalterable decision to refuse to change this attitude.

Mr. Churchill's statements to Evan Williams, secretary of the mine owners, that the government would not have passed the bill had it known the owners' attitude and that the miners have now shown "a change of heart," coupled with the declaration that the government is now ready to make suggestions for settlement, was followed by refusal of Williams on behalf of the Mining Association to discuss a national agreement.

This is believed to be an attempt on

the part of the owners to force the men back to work on terms to be made separately in each district and thus smash the Miners' Federation.

Former Premier Ramsay MacDonald was reported in a press dispatch on Sept. 6 to have said that, without being too optimistic as to an immediate end of the coal strike, he believed a settlement now was in sight. This statement was made in the course of an address before the Trade Union Congress at Bournemouth.

Co-operation Is Keynote At Annual Convention Of New York Retailers

An aggressive and continuous advertising campaign by anthracite operators "to impress upon the public the inherent advantages of anthracite over competing fuels, and to gain prestige and good will for the industry as a whole" is urged by retailers as a means of combatting efforts to encroach upon the market for hard coal. This was the gist of one of the resolutions adopted unanimously at the sixteenth annual convention of the New York State Retail Coal Merchants' Association, held at Saratoga Springs Sept. 1-4. The meeting was voted as one of the most interesting and enjoyable in the history of the association.

Standards of preparation and sizing also came in for attention, another resolution, also adopted unanimously, urging dealers to acquaint themselves with the proper methods of sampling

House Made of Coal Shows Town's Fuel Resources

The Chamber of Commerce at Middlesboro, Ky., has taken a novel method of bringing to the attention of the general public the coal deposits of that section. On the main street of the town and in the heart of its business district a house of four rooms with a large porch has been erected from blocks of coal cemented together. It is a staunch little dwelling, its shining black surfaces standing out in striking contrast to the surrounding structures of other material.

and testing each size and to supplement the inspection and testing service of the operators by making frequent tests of coal received and reporting the results of these tests to the producers. The retailers recommended that the size now called chestnut be renamed "range."

Opposition to legislation proposing the creation of a Coal Bureau in the federal government was voiced in a resolution deprecating "proposals to empower any federal officer, employee or bureau to require any additional reports or to make any further inquiry into our personal or business affairs than are now provided by existing laws."

Dealers were advised to have their salesmen trained in how to obtain the best results from the use of coal and in the disadvantages of competing fuels in order to be able to aid the public in making wiser selection of both fuel and equipment. Officers of the association were directed to consider the problem of direct sales to the retail trade by producers and wholesalers in order that the proper steps would be taken to protect the retail interests. Unqualified disapproval was directed against the proposed gasoline tax and any other legislation proposing an added tax upon commercial motor vehicles.

Hiram Blauvelt, vice-president, Com-fort Coal-Lumber Co., Hackensack, N. J., in an address on "Coal for Cash," outlined the value of cash business and how to increase it, pointing out incidentally the danger of long credit. "How to Meet Oil Competition" was the title of a talk by G. R. Stanion, manager, New York office, Anthracite Coal Service. Daniel T. Pierce, vice-president, Anthracite Operators' Conference, spoke on "Co-operation." "Using Buckwheat to Meet Competition of Other Fuels" was the subject chosen by Harry A. Smith, vice-president, Delaware, Lackawanna & Western Coal Co.

On the subject of "How Can Dealers and Operators Most Efficiently Co-operate to Increase the Sale of Anthracite" Alan C. Dodson, president, Weston Dodson & Co., spoke for the operators and Roderick Stephens, vice-president, Stephens Fuel Co., for the retailers. C. Solon Kellogg, president, Coal Merchants' Credit Bureau of Utica, N. Y., spoke on "Anthracite's Increasing Competition with Other Fuels; the Causes and How to Combat Them."

President Charles B. Staats presided at the business sessions; R. J. Wulff at the dinner on Friday evening, when Samuel B. Crowell was toastmaster, and John H. Murray on Saturday evening, when Thomas F. Farrell was toastmaster.

Dwindling Output of Ohio Mines Reveals Handicap to Industry of Operating Under Jacksonville Pact

By Paul Wooton

Washington Correspondent of Coal Age

An accurate idea of what has been going on in the unionized coal fields during the last three years may be deduced from the final report of the Bureau of Mines on production in Ohio during 1925. The report, which is published in the weekly coal report of Aug. 28, was prepared in the economics branch of the Bureau, of which C. P. White is chief, under the supervision of F. G. Tryon.

While Ohio may have been affected more sharply by the Jacksonville agreement than other areas, the results there indicate clearly what is happening in union territory.

Output Drops Sharply

Ohio's total 1925 production, as reported to the Bureau by operators, was 28,034,000 tons. Aside from years of great strikes it has been a long time since Ohio has fallen as low in the matter of coal output. Omitting the general strike in 1922 and the disturbance in 1914 and 1915, when the mine workers struck over the application of the mine-run law, it is necessary to go back to 1909 to find a production figure lower than that of 1925. The output was less than in 1924, the first year of the Jacksonville agreement. In comparison with 1923 the 1925 output in Ohio shows a loss of 31 per cent.

The comparison with 1920 is even more startling. It was in that year that the present union wage scale was set. In 1920 Ohio produced 45,878,000 tons of coal. This was the highest mark ever attained by that state. The 1925 output was 17,800,000 tons less than that record.

During the same period Kentucky increased its production from 35,000,000 to 53,000,000 tons, a gain of about 50

per cent. West Virginia shot up from 90,000,000 tons to 124,000,000 tons. This is an increase of 38 per cent. The 1925 figures for Kentucky and West Virginia are preliminary estimates made by the Bureau of Mines, but it is expected that the final figures will make no material change in them.

The extent to which the shift in output has tended to concentrate production in fewer mines is shown by the Bureau's report. In 1923 there were 906 commercial mines in active operation in Ohio. In 1924 the number dropped to 750 active mines. In 1925 the total was 639 and of these a considerable number were active for only a few months of the year. Thus the figures show the elimination of 267 commercial mines. These are not wagon mines. They were regular commercial producers, although some of them were small.

15,000 Jobs Wiped Out

Just as the number of mines has fallen so have the number of men enjoying employment. In 1923 there were 55,000 men on the payrolls of Ohio mines. In 1924 the number had dropped to 44,000. In 1925 the number was 39,700.

Even with the elimination of 30 per cent of the active production, the working time in 1925 averaged only 151 days. Although this was better than the average of 143 days in 1924, it was practically the same as the figure for 1923. The elimination of what are supposed to be the weakest mines has not provided employment for those remaining. In no one of the large producing counties of the state did the average working time reach 200 days. In Athens County, the largest producer in

southern Ohio, the average was 109 days. In Belmont County, the largest producer in eastern Ohio, the average was 162 days.

These figures do not tell the whole story. They include stripping propositions and deep mines. Stripping operations increased in 1925 and contributed more than 3,000,000 tons to the state's output. They averaged 170 days, or 20 more than the average for the deep mines.

Most significant of all are the figures of the average sales realization f.o.b. mines. There has been no change in the union wage rates since the middle of 1920. In 1921, a year of depression, when the operators felt that the price hardly covered the cost of production, Ohio producers received an average of \$2.65 for their coal. In 1923 they got \$2.43. In the first year of the Jacksonville agreement the average fell to \$2.03—a level evidently below the former average cost of production, as indicated by the many mines that were forced to close. In 1925 another 10c. was cut off the small realization of 1924. The average selling price was \$1.93. The strip mines sold f.o.b. mines for an average of \$1.55. Deep mines averaged \$1.97.

The war-time Fuel Administrator fixed \$2.35 as the fair price for Pittsburgh No. 8 run-of-mine and \$2.50 for that from the Hocking Valley. With a wage so much higher than that prevailing at the time that Dr. Garfield set his prices the Ohio operators are receiving 40c. to 50c. a ton less than he awarded them.

EDITOR'S NOTE.—The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessarily somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men, in the legislative and executive departments. There is no necessary connection between their views and Coal Age editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically related.

Production, Value, Men Employed, Days Worked and Output per Man per Day at Coal Mines in Ohio in 1925*

Counties	(Exclusive of Product of Wagon Mines)				Number of Employees						Average Number of Days Worked	Average Tons per Man per Day	
	Net Tons			Total Quantity	Value		Underground						
	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat		Total	Average per Ton	Miners and Loaders†	Haulage and Track	All Others	Surface			Total
Athens.....	2,509,034	45,624	44,125	2,598,783	\$4,830,000	\$1.86	4,518	426	619	502	6,065	109	3.92
Belmont.....	8,709,910	451,906	66,232	9,228,048	17,994,000	1.95	8,961	946	1,205	906	12,018	162	4.74
Carroll.....	185,473	115,982	2,430	304,085	641,000	2.11	257	46	45	69	417	181	4.02
Columbiana.....	294,122	43,236	2,591	339,949	756,900	2.22	385	20	55	51	511	173	3.84
Coshocton.....	165,726	34,897	1,391	202,014	445,000	2.20	266	34	50	40	390	149	3.48
Gurnsey.....	944,841	115,364	41,526	1,101,731	2,129,000	1.93	2,009	348	468	203	3,028	73	5.01
Harrison.....	2,744,795	10,585	71,746	2,827,126	4,450,000	1.57	737	81	112	851	1,781	179	8.87
Hocking.....	802,641	59,621	5,522	867,784	1,505,000	1.73	1,077	105	103	155	1,440	133	4.53
Holmes.....	.....	12,326	260	12,586	35,000	2.78	23	4	3	2	32	158	2.49
Jackson.....	82,507	86,715	4,500	173,822	399,000	2.30	187	23	34	34	278	177	3.52
Jefferson.....	4,483,404	648,211	39,731	5,171,346	10,242,000	1.98	3,761	580	489	897	5,727	187	4.81
Lawrence.....	1,994	114,073	108	116,175	229,000	1.97	116	7	12	14	149	200	3.89
Mahoning.....	54	40,743	20	40,817	124,000	3.04	55	7	7	12	81	197	2.55
Medina, Summit, Portage and Wayne.....	42,531	22,908	7,968	80,407	270,000	3.36	99	27	14	35	175	146	3.16
Meginty.....	638,393	21,971	3,981	664,345	1,138,000	1.71	953	150	143	180	1,426	130	3.57
Morgan and Washington.....	277,118	1,488	.....	278,606	611,000	2.19	214	32	34	21	301	267	3.47
Muskingum.....	238,928	60,442	2,693	302,263	598,000	1.98	280	18	26	134	458	156	4.21
Noble.....	343,230	3,120	12,722	359,072	657,000	1.83	466	97	101	49	713	99	5.07
Perry.....	1,507,370	66,466	16,097	1,589,933	3,131,000	1.96	1,580	147	228	381	2,336	170	4.00
Starke.....	89,758	295,630	3,005	388,393	1,097,000	2.82	385	66	36	80	567	208	3.29
Tuscarawas.....	817,116	445,436	34,002	1,296,554	2,626,000	2.03	1,075	167	131	197	1,570	182	4.53
Vinton.....	44,248	44,807	1,218	90,273	160,000	1.77	140	16	20	19	195	132	3.51
Total.....	24,930,193	2,741,751	362,168	28,034,112	\$54,057,000	\$1.93	27,544	3,347	3,935	4,832	39,658	151	4.67

*The figures relate only to active mines of commercial size that produced coal in 1925. The number of such mines in Ohio in 1925 was 639; in 1924 it was 750 and in 1923 it was 906.

†Includes also shotfirers.

Rules Against Amortization Of Development Costs

Amortization of the excess costs of opening and development work is not permissible under the provisions of section 234 (a) 8 of the Revenue Act of 1918, according to a recent ruling of the solicitor for the income tax unit of the Treasury Department. Section 234 permits the amortization of the excess costs on "buildings, machinery, equipment or other facilities, constructed, erected, installed or acquired, on or after April 6, 1917, for the production of articles contributing to the prosecution of the present war."

"It is a well established rule of statutory construction," reads the memorandum setting forth this decision, "that where general words follow the enumeration of particular persons or things, the general words will be controlled by the particular and limited to persons and things of the same general nature or class as those enumerated and the words other or any other following the enumeration of particular classes are to be construed as other such like and to include only those of like kind or character. It follows, therefore, that other facilities as used in the above-quoted provision of the statute must refer to property of a kind or character similar to buildings, machinery, and equipment."

Defines Terms

"The term buildings, machinery, and equipment is a general term used to describe a general class of tangible property which may be said to have a limited life or existence. Land, on the other hand, is a term commonly used to designate that class of tangible property which is permanent in its nature. Obviously the term other facilities does not include land. (See I.T. 1460, C.B. 1-2, 128). It is also obvious that intangibles are not included in the term other facilities and, therefore, are not property on which amortization may be taken."

"The development costs in the instant case refer to the cost of making shafts, tunnels, entries, crosscuts, etc., in the ground. Clearly before that work is done, the land, as such, which includes the vein of coal, is not subject to amortization. The development work does not result in a change in the character of the property or in the acquisition or creation of new property. It results merely in making the coal more accessible and perhaps in thereby increasing the value of the land. It certainly does not result in the acquisition, erection, or installation of a facility as that term is used in section 234 (a) of the Revenue Act of 1918. It is, therefore, the opinion of this office that the cost of opening and developing a mine is not subject to amortization."

Conflict with Appeal Board Ruling

This opinion is in direct conflict with the recent ruling of the Board of Tax Appeals which orders amortization allowances under section 1209 of the new revenue act. The board's decision was handed down in a test case brought by the Manville Jenckes Co. and overrules the opinion of the Internal Revenue Bureau denying this and other claims

Stocks Hold Up, Despite Bigger Coal Consumption

Although industrial coal consumption in July totaled 37,424,000 tons, according to the National Association of Purchasing Agents, this increase of 2,483,000 tons over the June total did not eat into the reserve stocks on hand. These were 37,841,000 tons on Aug. 1, as against 35,704,000 tons on July 1.

At the increased rate of consumption in July, stocks on hand were equivalent to a 31 days' supply. In terms of days' supply this was the same total as reported for July 1.

Comparative Estimates of Production, Consumption and Stocks

	Output Net Tons	Industrial Consumption Net Tons	On Hand in Industries Net Tons
April.....	48,008,000	39,048,000	49,150,000
May.....	47,113,000	36,813,000	38,876,000
June.....	50,417,000	35,541,000	33,918,000
July.....	51,901,000	37,424,000	36,998,000
August 1.....			37,841,000

Days' Supply on Hand Aug. 1 in Selected Industries

Steel plants.....	24
Electric utilities and coal-gas plants.....	60
By product coke plants.....	25
Railroads.....	29
Other industries.....	31

on the ground that they were not filed with the original tax returns.

Under the board's decision, amortization claims properly filed prior to June 15, 1924, are allowable. The board also reverses the bureau's action in denying amortization on facilities contracted prior to April 6, 1917, but acquired and paid for after that date.

The American Mining Congress tax division will shortly present proposed substantive and administrative changes in the federal tax law to the joint committee of industries, on which it is represented. These changes will later be submitted for consideration of the Congressional tax investigating commission.

Illinois Union Leaders See Better Trade Prospects

The employment outlook for the Illinois coal fields is improving, according to district officials of the United Mine Workers. Their opinion is based on reports of increased demand for coal and the reopening of 11 additional mines in July, giving promise of less serious unemployment this winter.

Zeigler No. 1 has resumed operations after five months of idleness, employing 1,300 men. Among other mines which have resumed operations are the Saline No. 3 at Benton, the Mulberry mine at Freeburg, and the Old Ben No. 11 at Christopher.

Industries and railroads are beginning now to store coal in anticipation of a strike in connection with the expiration next spring of the present three-year wage agreement. Various indications point to probability of prolonged negotiations before a new wage agreement is reached. Preparation for such an eventuality on the part of consumers is expected to lend added stimulus to the normal fall and winter demand.

However, there is still considerable unemployment, particularly in the central and northern Illinois fields and the industry can not be expected to reach capacity, even with more favorable conditions, for a long period of time, it was said. Harry Fishwick, acting-president of District 12, estimated that Illinois fields could produce in the neighborhood of 225,000,000 tons, whereas the market is calling for about 65,000,000 tons.

About 150 mines are operating in the state, employing about 50,000 men at present. During July, the Illinois Department of Labor reported the reopening of 11 mines whose payrolls exceeded 5,000 men. Weekly production figures for that month exceeded 1,000,000 tons, an increase over 1925 and 1924 during the same period.

Williamson and Franklin counties reported the best condition. All mines were operating at Herrin.



Electric Drill Getting In Its Fine Work

Underground scene in Shiloh Valley Mine No. 7 of the Southern Coal, Coke & Mining Co., in the southern Illinois field. W. F. Davis, general superintendent for the company, recently was host to the senior class of the School of Mines and Metallurgy of the University of Missouri, when he showed them through the mine, explaining the work and the machinery. The drill and loading machines seemed to share honors as the headliners.

Hampton Roads Coal Piers Break Another Record

Hampton Roads coal piers for the second time this summer broke the world's coal dumping records with a total of 2,763,013 tons dumped by the three terminals in August, against 2,755,556 tons for July, which was in itself the highest record up to that time.

The Norfolk & Western piers at Lamberts Point dumped 1,017,329 tons in August, against 1,068,682 tons in July, while the Chesapeake & Ohio piers at Newport News showed a total of 879,694 tons for August against 953,538 tons for July. But the Virginian piers at Sewalls Point dumped 865,990 in August, against 733,336 in July, and showed the increase that brought the month's total a few thousand tons above the previous high mark.

All piers operated 24 hours a day, seven days a week. British shipments, held responsible for the unusually heavy movement during the past summer, kept up at a high pitch, and combined with the seasonal increase in demand to make the high record.

Convicts Withdrawn from Missouri Coal Mine

On an order issued by Governor Sam A. Baker the Missouri State Penal Board on Sept. 2 recalled the sixty-five convicts from the Missouri State Penitentiary who for the past several weeks have been operating a coal mine in Lafayette County leased by the state from the Western Coal & Mining Co.

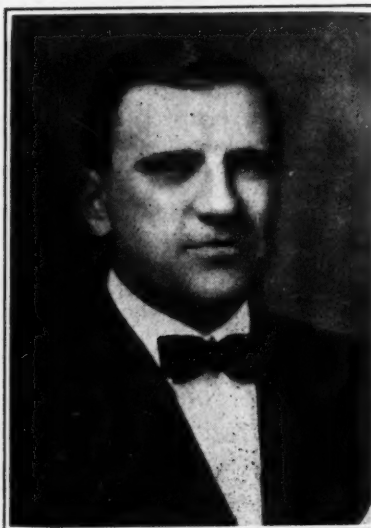
The action by Governor Baker is the result of a threat made by organized labor to carry the issue into the courts. They contended that the operation of the coal mine by unskilled convicts was in direct violation of the Missouri statutes covering the mining of coal and an attorney was retained to take such steps as might be necessary to force the cessation of operations by the convicts.

In his letter to the State Penal Board, Governor Baker gave as his reason for ordering the return of the convicts to the state penitentiary that the union men who were thrown out of work when the mine was taken over by the state had not found other employment.

State officials have stated that it was their understanding the union men were to be given other jobs.

Praises Mindanao Coal

Great possibilities in the coal deposits on Mindanao Island are seen by Col. Carmi A. Thompson, special investigator for President Coolidge in the Philippines, but present government operation is unreservedly condemned. "I have never seen," said Col. Thompson, who once worked in the coal mines of the United States, "coal so advantageously located or so susceptible of cheap mining and easy handling. Its economic value to the Philippines is beyond estimation."



W. H. Cunningham

Cunningham Again Drafted To Lead Committee Fight

W. H. Cunningham, president Burgess Branch Coal Co., Huntington, West Virginia, and secretary of the West Virginia Coal Association, has been reappointed chairman of the government relations committee of the National Coal Association, according to an announcement by President Walter Barnum.

Mr. Cunningham has been chairman of this committee during the past three years, during which time many legislative proposals affecting the industry had to be met. After full consideration, Mr. Barnum stated his opinion that Mr. Cunningham's job had not been completed, for the session of Congress this coming winter will be but another session of the 69th Congress, the legislative proposals before which Mr. Cunningham and his committee have opposed so successfully thus far.

Mr. Cunningham's associates on the committee are:

H. F. Bovard, president, Keystone Coal & Coke Co., Greensburg, Pa.; A. W. Calloway, president, Davis Coal & Coke Co., Philadelphia, Pa.; Henry T. DeBardleben, president, DeBardleben Coal Corp., Birmingham, Ala.; Geo. C. Eastwood, vice-president, Consolidated Coal Co., Saginaw, Mich.; Michael Gallagher, M. A. Hanna Co., Cleveland, Ohio; H. A. Glover, vice-president, Knox Consolidated Coal Co., Indianapolis, Ind.; Robert Grant, president, Castner, Curran & Bullitt, Inc., New York; Sidney J. Jennings, president, U. S. Fuel Co., New York; J. J. Lincoln, general manager, Crozer Coal & Coke Co., Elkhorn, W. Va.; F. S. Love, president, Union Collieries Co., Pittsburgh, Pa.; A. J. Maloney, vice-president, Chicago, Wilmington & Franklin Coal Co., Chicago; P. J. Quealy, president, Gunn-Quealy Coal Co., Kemmerer, Wyo.; C. F. Richardson, president, West Kentucky Coal Co., Sturgis, Ky.; John A. Sargent, vice-president, Central Coal & Coke Co., Kansas City, Mo., and R. H. Sherwood, president, Central Indiana Coal Co., Indianapolis, Ind.

Explosion and Fire Kills 16 in Oklahoma Mine

Sixteen miners lost their lives when two blasts wrecked one slope in Mine No. 29 of the Superior Smokeless Coal & Mining Co. at Tahona, Okla., Sept. 3. The bodies were reported located by rescue squads early the same evening.

Three bodies had been removed to the surface. The others were not brought out of the mine because fire barred the entrance. Rescue squads were reported to be fighting the flames to prevent them reaching the bodies and further wrecking the shaft of the mine.

Severe burns covered the bodies brought to the surface. They were those of Dennis James, Ross Dreen and Amiel Wannia.

The explosion, which was attributed to gas, occurred shortly after 8 a.m. At the time 138 men were at work in the mine, but, with the exception of the sixteen caught in Entry 7½ west, all made their way to the surface. Several were severely injured. Fire which came in the wake of the blast blocked efforts to penetrate the wrecked entry.

The mine has been in operation twelve years and this was its first disaster. It is manned by union workers.

Hall Appeals to Ohio Miners To Support Union

Lee Hall, president of District 6, United Mine Workers, is making desperate efforts these days to hold the union membership in line and prevent desertions to any mines which may be opened up on the modified 1917 wage scale recently approved by the Ohio Coal Operators' Association.

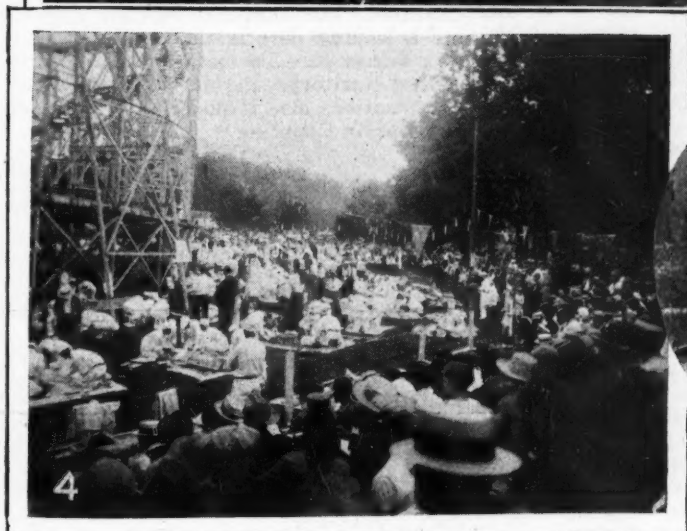
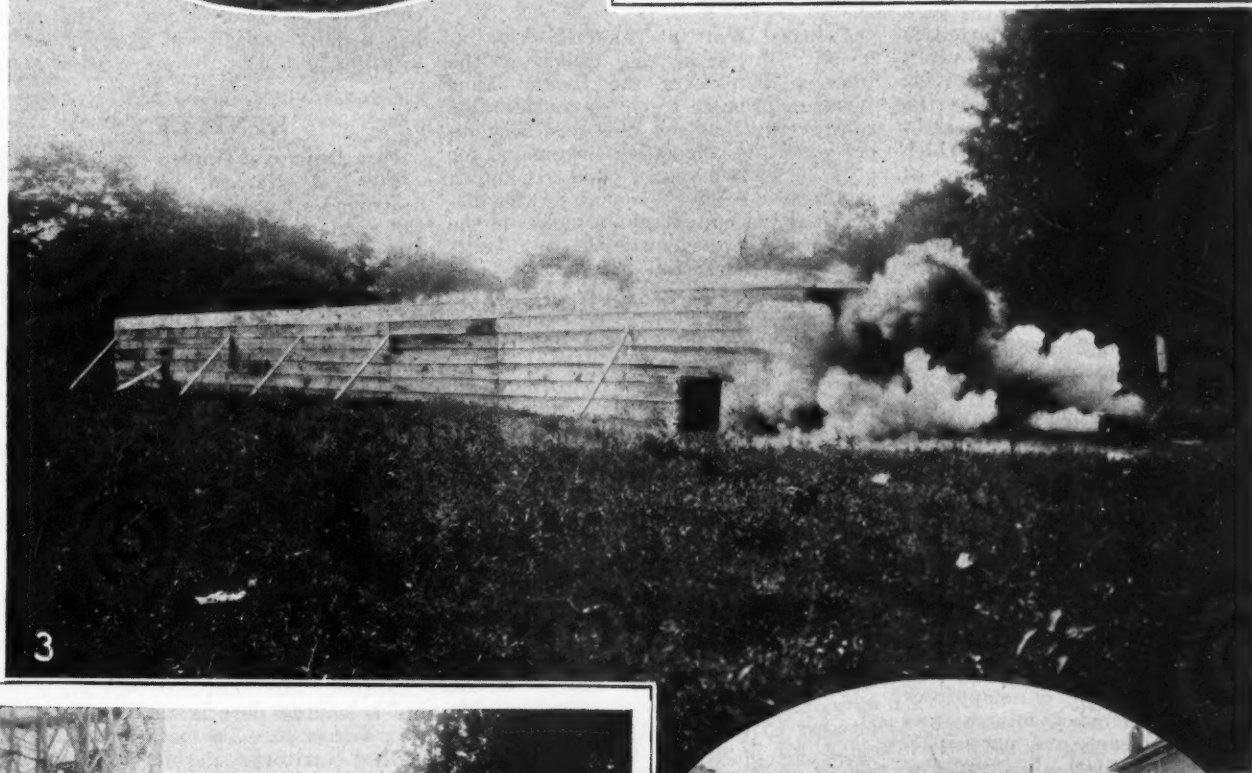
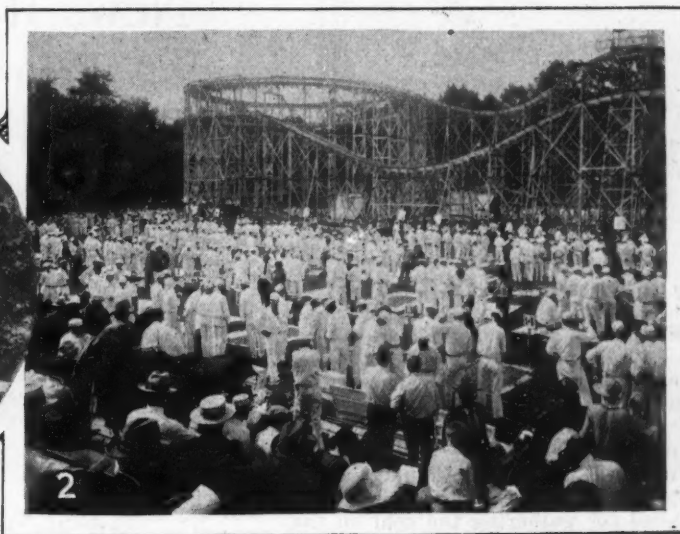
Speaking at Bellaire, Ohio, a few days ago, Hall admitted that the situation confronting the union was the most serious in the thirty-five years of its existence, but declared that the organization would continue the fight to hold to the Jacksonville wage rates.

Defending the action of the executive board in placing a five per cent assessment on the wages earned by working miners, Mr. Hall said that the district union had paid out \$1,158,128.95 in strike benefits and relief funds since the Jacksonville agreement became effective. Southern Ohio had received \$530,600 in relief funds; Jackson-Pomeroy, \$282,055; Cambridge, \$101,500, and other sections, \$52,150. The union also had paid out \$291,893 in strike benefits.

The union leader found some comfort in the reports of the reopening of certain mines under the Jacksonville scale. This is proof, he claimed, "that the operators are divided. They had planned to remain firm in an effort to bring about a reduction in the wage scale and the modification of the Jacksonville agreement, but some operators in the state refused to suspend, in an endeavor to bring about this condition."

The Chicago & Eastern Illinois Ry. has placed orders for 500 all-steel hopper coal cars.

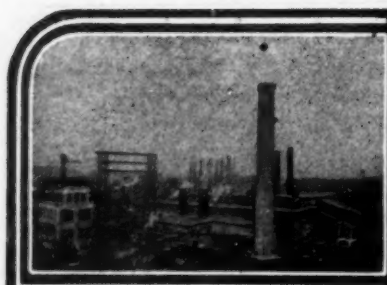
West Virginia Holds Big Safety Day in Huntington



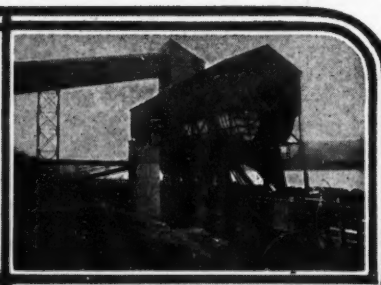
(1) Governor Gore inspects the dust-explosion gallery. To the left in white trousers is R. M. Lambie, chief inspector. Just back of the barrel is J. W. Paul and on the right is the Governor. In uniform is Colonel R. E. O'Connor, superintendent of the Department of Public Safety of West

Virginia. (2) The 122 competing teams completely surrounded the figure-eight roller coaster of the amusement park where the contest and celebration were held. (3) Blown-out shot fails to ignite the mixture of rock and coal dust. (4) At work on first problem. (5) J. W. Cales, G. B. Frid-

ley, C. H. Stoots, Jim Keith and his son, Green Keith, who barricaded themselves at the Eccles explosion, are present to exemplify the hazards of coal mining, the value of a clear head in the presence of danger and the importance of explosion prevention.



News Items From Field and Trade



ALABAMA

Improvements Under Way.—The Franklin Coal Mining Co. is making a number of improvements at its Powhattan mines, in western Jefferson County with a view to speeding up production and to facilitate the handling of the output inside the mine. A large assembly yard is being constructed at the terminus of the main haulage and a thirteen-ton electric locomotive will be installed for gathering the coal on the long entries and bringing it to the yard from which point it will be hoisted to the surface. A number of new dwellings are to be erected also to provide accommodations for an increase in the working forces. The company has recently taken on a large contract which will call for full-time operations at capacity for some time. R. T. Daniel, Birmingham, is general manager of the company and J. H. Tidmore superintendent of the Powhattan operations.

Group Insurance for Miners.—One of the largest group insurance contracts in force in the Birmingham district was put in operation recently when the Alabama Fuel & Iron Co., adopted a program providing 1,500 miners and other employees of the company with approximately \$2,000,000 of life insurance protection. The insurance is being underwritten by the Metropolitan Life Insurance Co. on a co-operative basis which provides for the payment of premiums jointly by employer and employees. In this way the employees' share of the cost is substantially reduced. Ninety-five per cent of the workers, have accepted the plan. In the main classification of employees covered, which includes miners and general laborers, each one participating in it receives \$1,000 life insurance. Employees in other classifications are insured for larger amounts. The policies issued also provide a temporary fixed income for the insured, in case he becomes totally and permanently disabled before age 60.

INDIANA

To Rebuild Tipple.—Following an inspection trip of the officials of the company, announcement was made that the tipple of the Globe Coal Co., near Petersburg, which was destroyed by fire on July 4, will be rebuilt at an estimated cost of \$50,000.

Boom Forecast in Stripping.—The Mid-Continent Coal Co., which recently purchased 639 acres of coal land about three miles southwest of Brazil, has started a force of men at work laying a switch to their proposed coal stripping pit and expect to begin shipping

coal within the next 60 days. The company has sixteen carloads of machinery on the way to the site, including an electric caterpillar tractor shovel. About 100 men will be employed. Several other coal stripping mines are to be opened in that territory this fall. The Maumee Collieries Co. will open a stripping pit on the old Jackson Coal Co. land northeast of the city, machinery already having been ordered. Coal men say that six big pits will be in operation within a year.

Political War in Union Ranks.—Internal politics in the ranks of the Indiana district of the United Mine Workers promise to cause considerable controversy between now and November when the officers will be elected for a period of two years. What is known as the progressive element of the district has placed a complete ticket in the field, from president down to district board members and the progressives are making an aggressive campaign. They claim to have the support of many locals at the present time.

KANSAS

Federal Court Has Jurisdiction.—The federal courts have jurisdiction over all compensation suits against foreign corporations, according to United States District Judge John C. Pollock, who has ruled against counsel for injured miners resisting removal of their causes from the state courts where the award asked is less than \$3,000. The federal judge held the plaintiff can not know to what amount of compensation he is entitled and that it is the duty of the government to protect his interest to the extent that if it is decided his injury entitles him to an award of more than \$3,000 it should be given him though he had demanded a lesser amount. Practically all the larger operators in the Kansas field are foreign corporations.

Will Sink New Shaft.—The Western Coal & Mining Co. will at once begin sinking a shaft for its mine No. 24 seven miles north and two miles east of Pittsburg, J. J. Delaney, superintendent, announced on Aug. 25. The shaft will be sunk on a 1,200-acre tract containing a deposit of virgin coal three feet and four inches thick and covered by an overburden of approximately 200 feet. The mine will employ between 300 and 400 men when in full operation and have a production of 1,200 to 1,500 tons of coal a day.

There has been a great increase in activity in Kansas mine the past few weeks. Several deep mines that had long been idle have resumed operation.

A number of new electric caterpillar shovel operations are in contemplation between Mulberry and Arcadia.

Simion Mine Leased.—The Simion Coal Co. mine southeast of Chicopee, has been leased to Frank Stumfoll, Edward Stumfoll, Sr., Edward Stumfoll, Jr., Gus Bernhardt, Mark Spicer, Anton Rasner and Anton Polowich, who will run it on a co-operative basis. The mine, which has full electrical equipment, has been operated by the Simion company for many years. The mine has a daily capacity of approximately 200 tons and normally employs 45 men.

KENTUCKY

Fire Destroys Tipple; Causes Death.—Fire at Hazard, on August 28, destroyed a tipple of the Wakenva Coal Co., and caused the death of M. C. Morgan, outside superintendent of the company, who was crushed to death by a drive-wheel and gears which fell from the tipple and rolled down a steep hill. The tipple was on the side of a steep hill opposite Hazard on the Kentucky River. Morgan was trying to save the head house, when the supports burned away, and two tons of machinery rolled down the hill. Loss was estimated at \$50,000.

Ford in Conservation Drive.—One of the largest timber-land holders in Kentucky to place timbered and cut-over lands under the protection of the Kentucky Forest Preserve is the Fordson Coal Co., with holdings approximating 120,000 acres in Clay and Leslie Counties. The Ford interests are playing a leading part in the organization of a Forest Fire Protective Association in that territory. Formation of similar organizations also is under way in Bell and Harlan Counties.

MASSACHUSETTS

Hits Anthracite Shippers.—Anthracite producers are accused of trying to make the public pay the cost of the 1925-26 suspension, in a statement by Charles H. Adams, chairman of the Commission on the Necessaries of Life. A survey made by the commission shows that deliveries by the dealers from April 1 to July 31 were 1,702,606 net tons as compared with 1,714,351 tons last year in the same period. The stocks on hand are 705,871 tons, as compared with 916,305 on the same date a year ago.

MISSOURI

War on Convict Mine.—A mass meeting of union sympathizers at Jef-

erson City, on Aug. 28 protested against the operation of the South mine near there, with convict labor and announced that court action would be resorted to prevent a continuance of the system. John P. Leahy, St. Louis attorney, has been retained to wage the legal fight. Similar mass meetings are planned for various parts of the state. D. A. Frampton, representing International President John L. Lewis of the United Mine Workers declared: "We shall fight this fight from two sides. We shall oppose administration men who are under the tutelage of Governor Baker because their pledges cannot be relied upon."

NEW YORK

The Cleveland & Buffalo Coal Co. of Buffalo has been made the sales representative in western New York and Canada of the Pittsburgh & Shawmut Coal Co.

OHIO

Strike for Phalanx.—A strike took place at the Drake mine of Monsarrat Bros. when the company opened up following an idleness of many months. After cleaning up certain men were asked to return, but local union officials demanded that all men be given an equal share of the work. This was refused by the company and a strike was called the second day after resuming operations. The difficulty has not yet been adjusted.

Operations will soon be resumed at the White Ash mine in the Big Bailey field of the Hocking Valley, under the Jacksonville scale. The work of cleaning up the mine has been completed.

Issues Production Report.—The Department of Industrial Relations' final report on 1925 output from Ohio mines shows a total of 27,564,760 tons, compared with 30,096,893 tons in 1924; 40,904,275 tons in 1923; 27,526,555 tons in 1922; 32,242,857 tons in 1921 and 45,227,077 tons in 1920. Of the total production in 1925, 23,424,626 tons were machine-mined; 2,601,379 tons were produced by stripping and 1,538,755 tons were pick-mined. A much lower production is predicted this year. The full time capacity is about 55,000,000 tons.

The Stanley mine of the Lorain Coal & Dock Co., near St. Clairsville, has reopened, paying the Jacksonville scale. The mine normally employs 400 men and has been idle for four months.

PENNSYLVANIA

Adopts Air-Cleaning.—An air-cleaning plant with a capacity of 325 tons per hour is being erected at the Montour No. 10 mine of the Pittsburgh Coal Co. at Library. The new plant has sixteen units and will clean all sizes under 24-in. Shaking conveyors have been installed in the Warden and No. 9 mines.

Peale, Peacock & Kerr, Inc., have sent the volunteer firemen of Spangler a check for \$500 for service rendered during the series of fires which destroyed much property of the corporation.



One of the Large Operations of Eastern Kentucky

This mine of the Pike Floyd Coal Co., which is associated with the Pittsburgh Coal Co., was opened about 1920. In the last three years the production has been increased from 500 to 2,500 tons per day. The tippie is located a half mile off of the main line of the Chesapeake & Ohio Ry., at Betsy Layne, which is about 12 miles "below" Pikeville. Since 1923 Joseph Slater has been general superintendent of the operation.

Operator Retains Penalties Collected.

—Sometime ago the Buffalo & Susquehanna Coal Co. held back wages amounting to about \$10 each from its miners, as a forfeit in case of strike, refusing to return the money, amounting to more than \$5,000 in all, after a strike had taken place. On suit being brought to recover, it was agreed to regard the sum held as fines and costs and nothing was returned to the men.

The Oliver & Snyder Steel Co. is firing a number of ovens at the company's coke operations near Uniontown. These ovens have been idle for two years.

The Puritan Coke Co. of Uniontown has made arrangement to import a coke reclaiming machine to screen and wash coke for domestic sale.

The mine of the Laurel Coal Mining Co. in the Connellsville region, plans an early resumption of operations. Negotiations were recently concluded whereby the Maritime Coal Co. of Philadelphia comes into possession of about 2,500 acres of coal land, including the holdings of the Laurel and of the Tub Run Coal companies.

Another Mine Starts Open Shop.—The Winmore mine of the Wineland & Gilmore Coal Co. at Smithtown, has started up after being idle since 1923, on the non-union basis, paying the 1917 scale. The first coal was dumped on August 25, when 18 old employees reported for work. This mine is not far from the Euclid mine of the Pittsburgh Coal Co., which is also working on the 1917 scale.

UTAH

Salt Lake Contracts Let.—Salt Lake City has let coal contracts as follows: Bamberger Coal Co., lump coal, \$5.65; screened slack, \$3.73. Standard Fuel Co., slack, \$3.45, all delivered in the bins. The total supply of coal called for was approximately 7,400 tons.

VIRGINIA

Gives Prizes for Best Yards.—Annual contests with prizes are conducted by the Virginia Iron, Coal & Coke Co. for the best-looking yards and best-appearing vegetable gardens. One prize is given at each colliery, Toms Creek, Inman and Imperial. The winners this year were for the best yard and best garden were respectively: at Toms Creek, N. D. Pope and Robert Hewitt; at Inman, F. C. Woodward, and Alex Kachanear and at Imperial, Ira Anderson and Peter Palhoezay.

WEST VIRGINIA

Building New Steel Tipples.—The Pemberton Coal & Coke Co. has let contracts for steel tipples at its plants at Affinity and Big Stick. Each tippie will have a capacity of 350 tons per hour and will be designed for the simultaneous loading of five sizes.

The Coal Products & Carbide Co. of Boston, which was reported several weeks ago as contemplating the erection of a by-product plant at Hoard, W. Va., has exercised the option taken last February on 72 acres of ground and has purchased the property from the Hoard heirs. The tract is on the eastern side of the Monongahela River at lock No. 9, about one mile south of Point Marion, Pa.

CANADA

Union Fight Closes Nova Scotia Mines.—Insistence by the United Mine Workers on 100 per cent unionization has closed down the Albion and Allan shafts of the Acadia Coal Co. Several men, members of the One Big Union, volunteered to continue work, but the mine management joined with the miners' union in demanding affiliation with the United Mine Workers, with whom the company has a contract.

Among the Coal Men

F. T. Fitzharris, for ten years chief engineer for the eastern mining division of Cosgrove-Meehan Coal Corporation, with headquarters in Johnstown, has resigned to take charge of the United States Rock Asphalt Co., with plants in Kentucky and Alabama. Mr. Fitzharris was recently elected president of the latter company. His new headquarters will be in Louisville, Ky.

James A. Ferguson, northern sales agent of the Pittsburgh Coal Co., with headquarters at Duluth, Minn., was tendered a dinner at the Blue Goose Inn, on Mille Lacs Lake, recently on the occasion of his birthday. Twenty-five of his business and personal friends were on hand. Mr. Ferguson ranks as the dean of the coal trade as the Head of the Lakes. He went to Duluth in 1891 as manager of the Pioneer Fuel Co., which occupied a dock on the site of the present Clarkson dock. The Northwestern Fuel and the Ohio Coal Co. were the other dock companies in business there at that time.

Wesley P. Montgomery, who recently was succeeded by Frank J. Honan as Buffalo resident manager of the North American Coal Corporation, has been elected president of the Factory Fuels Corp., with which he was connected before joining the North American corporation.

D. C. Ashmead, of the Bureau of Mines staff, has completed the field work on rivers and streams in his study of the disposal of anthracite mine waste.

Edward H. Coxe, of Uniontown, Pa., who recently resigned as general manager of the Snowdon Coke Co., has deserted the coal and coke industry and organized, with Harry M. Long, the Overland Knight Motor Corporation, which on Aug. 16 took over from the agency for the Willys-Knight and Overland automobiles in Uniontown and a large part of Fayette County. Mr. Coxe is president and treasurer of the new company and Mr. Long is vice-president, secretary, and sales manager.

T. R. Licklider, for a number of years the Norfolk manager for the Trans-Ocean Coal & Transport Co., has severed that connection and is now the local representative for Percy Heilner & Sons, in charge of the Norfolk district.

J. C. Clapperton has resigned as superintendent of the mine of the Hazy-Eagle Collieries Co., at Hazy, Raleigh County, W. Va.

Dr. Thos. S. Baker, president, Carnegie Institute of Technology, Pittsburgh, returned a few days ago from a European trip on which he extended invitations to a number of scientists and others to participate in the conference on coal combustion which will be held at Carnegie Tech the week of November 15. Dr. Baker stated that a number from Europe will be present at the conference.

William Green, president of the American Federation of Labor, has issued another appeal for assistance in behalf of the men, women and children



William Green

affected by the strike of British coal miners. "This strike of the miners in Great Britain has reached the point where suffering among the miners' families is intense," says the appeal. "Give to the limit of your ability." The appeal is made to the officers and members of all national and international unions, state federations of labor, city central bodies and local unions.

Obituary

Clinton C. McClarty, 64 years old, head of the Tri City Coal Co., Louisville, Ky., died on Aug. 27, of apoplexy, suffered in a stroke a week before at his home on Gibson Lane. Mr. McClarty prior to going into the coal business was president of the First National Bank, Louisville, over a long period of years, and at various times was interested in the old White City Amusement Park, Par-A-Camp Co., and other organizations.

Walter S. Hogg, coal operator and lawyer of Jackson, Ky., who had been suffering from leakage of the heart for some time, died on Aug. 27, at the St. Anthony Hospital, Louisville, where he had been for a few days. Mr. Hogg was 45 years old.

Charles Spensberger, 47 years old, connected with the coal industry in the Pittsburg, Kas., district from boyhood, died at his home in Gross on Aug. 29. For the last year he and Harold Cowan had operated a mine leased from the Clemens Coal Co. near Coalvale, under the name of the Steam & Domestic Coal Co. He was foreman for the Central Coal & Coke Co. and the Doubleday Coal Co. before engaging in business for himself.

Traffic News

C. & O. Wants to Purchase Three Short Lines

The Chesapeake & Ohio Ry. has asked the Interstate Commerce Commission for authority to purchase the Greenbrier & Eastern Loop & Lookout and the Sewell Valley railways in West Virginia for \$2,409,000. The Sewell Valley, which runs from Meadow Creek station on the Chesapeake & Ohio to the mouth of Sewell Creek, leases the Loop & Lookout for \$17,158 annual rental. The latter road runs from Dyer to Nallen, 18.79 miles.

The Greenbrier & Eastern runs from Greenbrier & Eastern Junction to the road's shops, 11 miles. A recent inquiry by the Commission into the purchase of Greenbrier & Eastern stock by the Chesapeake & Ohio developed that the Union Trust Co. of Cleveland had purchased all the shares for \$1,500,000, or \$149 each.

Lower Coke Rates Approved

The New York Public Service Commission has approved the following new rates of the New York Central Lines on coke, coke breeze and dust, from Troy to Warners and Memphis \$2.02 per net ton; Jordan, North Weedsport, North Port Byron, and Fox Ridge, \$2.27; Savannah, Clyde, Lock Berlin, Lyon, North Newark, East Palmyra, Palmyra, Walworth and North Macedon, \$2.65; Fairport, East Rochester, Brighton and Rochester, \$2.77; effective Sept. 22.

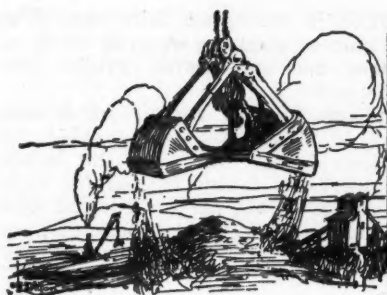
Want Cut to Buffalo-Rochester

The Monongahela Coal Operators' Association has filed a complaint with the Interstate Commerce Commission asking that the rate to the Buffalo-Rochester district be reduced from \$2.39 a ton to \$2.24 a ton, so as to place Connellsville-Morgantown on the same basis as the Pittsburgh district.

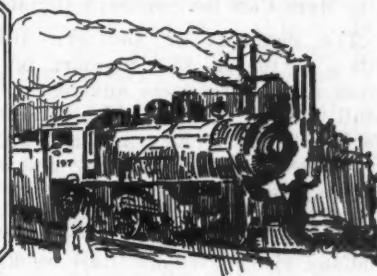
Rates on coal from points on the Virginian Ry. and the Kanawha Glen Jean & Eastern R.R. to points on the Chesapeake Western Ry. are unreasonable and unduly prejudicial in the opinion of J. C. Harraman, an Interstate Commerce Commission examiner, who has recommended that the Commission so find.

Industrial Notes

The Chicago Pneumatic Tool Co. on Oct. 1 will open its new building on Iron Street near Thirty-seventh Street, Chicago. In order to assure prompt deliveries this structure has been erected with a platform on the east side to accommodate the loading of two freight cars on the Chicago Junction Ry. It also has loading doors for trucks, and, in short, is designed with all necessary facilities to insure immediate service on compressors, engines, complete lines of electric and pneumatic tools, vacuum pumps and all accessories in connection therewith.



Production And the Market



Domestic Buying Crowds Export Demand for Lead In Bituminous Coal Markets

Domestic buying is crowding the export trade for the center of the stage in the bituminous markets of the country. Anticipating the advances in prices on prepared coal which became effective in many producing fields the first of the month, retail dealers and household consumers displayed such a marked revival in interest that the volume of orders, in many cases, gave the shippers a back-log of unfilled tonnage to carry them through the greater part of September.

With few exceptions, the surplus steam coal thrown upon the market as a result of the heavier production of prepared sizes was readily absorbed by canny industrial purchasing agents. There was a slight weakening in quotations on Pittsburgh No. 8 slack and a somewhat sharper drop in spot prices on West Virginia high-volatile slack at Cincinnati. Eastern Kentucky slack, on the other hand, advanced. Illinois and Indiana screenings were soft.

Bituminous Output Expands

Some statistical measure of the increased volume of buying is to be found in the bituminous production data for the past fortnight. During the week ended Aug. 28, the Bureau of Mines reports, the output approximated 11,215,000 net tons. This was the largest weekly output since the anthracite strike period of last winter. Preliminary figures covering the loadings the first two days of last week show no slackening in the production rate. Cumulative output since Jan. 1 is ahead of any recent year except 1923, which showed an excess production over 1926 at the end of August of 19,535,000 tons.

In the export division of the trade, the United Kingdom continues to be by far the best overseas customer of the American producers. During the week ended last Thursday approximately 300,000 net tons

destined to Great Britain and Ireland cleared from Hampton Roads, Baltimore and Philadelphia. A dozen other countries also figured in the clearance lists.

Prices Move Upward

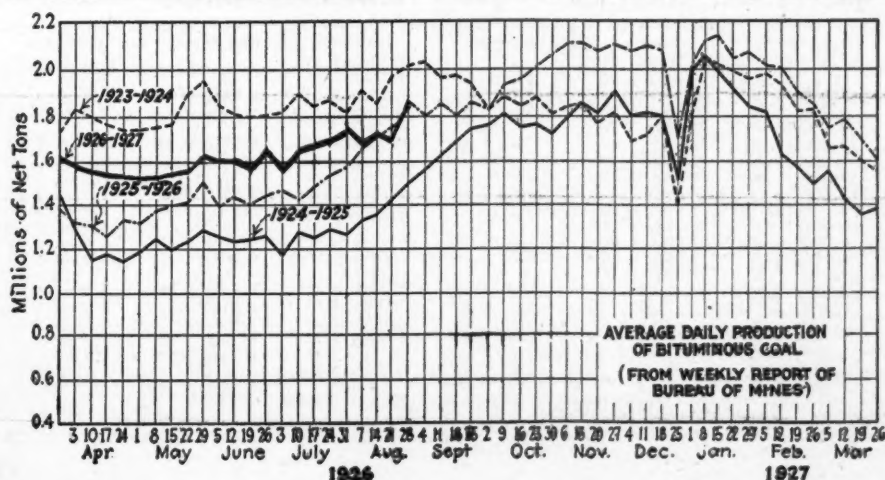
The advances in prepared coal prices and the further appreciation in spot quotations on a large part of the steam production are reflected in further increases in the *Coal Age* Index of spot bituminous prices. On Sept 4 the index was 171 and the corresponding weighted average price was \$2.07. This was an increase of three points and 3c. over Aug 30.

Anthracite, too, finds the outlook more favorable. With the vacation season ended household consumers are turning their thoughts to next winter's coal supply and retail distributors are more ready to build up yard stocks. Production the last week in August was close to the 2,000,000-ton mark.

As forecast in *Coal Age* a few weeks ago, the major producing companies made no change in their circular prices on Sept. 1. There have been some slight increases in independent spot quotations on steam sizes. The industrial market has been looking up. Less company steam coal is going into storage and the surplus independent tonnage is less of a problem, although sharp concessions still are necessary to move this coal.

The lake trade is less active in both anthracite and bituminous. Dumpings of hard coal at Buffalo during the week ended Sept. 2 dropped to 78,200 net tons. Bituminous dumpings at the lower lake ports during the week ended Sept. 5 totaled 777,913 tons of cargo and 51,302 tons of vessel fuel, bringing the season's total to date to 19,204,870 tons, as against 17,175,927 tons last year and 14,628,122 tons in 1924.

The Connellsville coke market is featureless, but prices hold and output shows a slight gain.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
Aug. 14.....	10,261,000	10,628,000
Aug. 21 (a).....	10,522,000	10,533,000
Aug. 28 (b).....	11,133,000	11,215,000
Daily average.....	1,856,000	1,869,000
Cal. yr. to date..... (c)	315,298,000	353,505,000
Daily av. to date.....	1,552,000	1,739,000

ANTHRACITE

Aug. 14.....	1,857,000	1,937,000
Aug. 21.....	2,155,000	1,782,000
Aug. 28.....	2,263,000	1,999,000
Cal. yr. to date..... (c)	60,794,000	52,243,000

BEEHIVE COKE

Aug. 21 (a).....	144,000	183,000
Aug. 28 (b).....	166,000	182,000
Cal. yr. to date..... (c)	6,366,000	8,101,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

More Call for Southern Illinois

The demand for southern Illinois lump increased the forepart of last week as retailers were anxious to forestall the 25c. advance which became effective Sept. 1. Egg, nut and screenings, however, were draggy and some concessions were made to move fine coal. Some of the steam tonnage went as low as \$1.30@1.40. Fourth Vein Indiana also moved well last week, but both steam and domestic from Fifth Vein mines lagged. Stripping operations, with their lower prices, take their toll of the shaft mines in the competitive battle.

The export movement of high-volatile coals has forced inland prices on West Virginia up to the levels obtained on eastern Kentucky offerings. Block from the latter district commands up to \$2.75, and egg, \$2. Nut-and-slack is heavy at \$1@1.15 for high-grade coal. The boom in smokeless continues. Choice lump is scarce at \$4; mine-run

readily brings \$2.50, but sales at \$2.75 are made with more difficulty.

Southern Illinois lump and egg moved freely in the St. Louis market prior to the Sept. 1 increase, but this demand further weakened the position of the smaller sizes. Local sales of coke were large anthracite and smokeless were backward. Middle grades were purchased by the country domestic trade. In the city market, western Kentucky was under pressure, but competition from that field nevertheless remains strong enough to keep Mount Olive and Standard business depressed.

Western Kentucky Prices Up

Western Kentucky producers, however, increased prices on prepared sizes in the Louisville market 15 to 25c. The maximum on mine-run moved up a nickel, but the levels on screenings were unchanged. Eastern Kentucky block went up 25c. For 2-in. lump current quotations are \$2@2.50, with some operators asking \$2.90. As high

as \$1.95 is quoted on mine-run. The minimum on slack seems to be \$1.10, as against 90c. on poorer grades two weeks ago.

Apparently the danger of a bad break in slack has been avoided for the time being. Some of the larger consumers are taking in coal for storage and requirements for current consumption are heavy. Retailers, too, are laying in fall stocks. The car supply is not all that it should be, but the scarcity is in nowise comparable with that of other years of big demand. Labor conditions, too, appear satisfactory, despite reports to the contrary from union sources.

Continued improvement in bookings in the Northwest make operators at the Head of the Lakes much more optimistic over the outlook. Retailers as well as industrial buyers are coming into the market for more coal. The iron and steel interests have been planning increased production. Competition for spot business, however, is keen, al-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	Sept. 5, 1925	Aug. 23, 1926	Aug. 30, 1926	Sept. 4, 1926†	Midwest		Market Quoted	Sept. 5, 1925	Aug. 23, 1926	Aug. 30, 1926	Sept. 4, 1926†
Smokeless lump.....	Columbus...	\$4.60	\$3.75	\$4.25	\$4.25	\$4.25@ \$4.50	Franklin, Ill. lump.....	Chicago.....	\$3.25	\$3.00	\$3.00	\$3.00@ \$3.25	
Smokeless mine run.....	Columbus...	2.50	2.15	2.25	2.15	2.15@ 2.50	Franklin, Ill. mine run....	Chicago.....	2.35	2.40	2.40	2.35@ 2.50	
Smokeless screenings.....	Columbus...	1.50	1.40	1.40	1.35	1.35@ 1.50	Franklin, Ill. screenings...	Chicago.....	1.60	1.60	1.60	1.30@ 1.85	
Smokeless lump.....	Chicago...	4.75	4.10	4.35	4.25	4.25@ 4.50	Central, Ill. lump.....	Chicago.....	2.85	2.60	2.60	2.50@ 3.00	
Smokeless mine run.....	Chicago...	2.60	2.30	2.35	2.25	2.25@ 2.50	Central, Ill. mine run....	Chicago.....	2.10	2.20	2.20	2.15@ 2.25	
Smokeless lump.....	Cincinnati...	5.00	3.85	4.10	4.25	4.25@ 4.50	Central, Ill. screenings...	Chicago.....	1.55	1.50	1.50	1.40@ 1.60	
Smokeless mine run.....	Cincinnati...	2.50	2.35	2.35	2.50	2.50	Ind. 4th Vein lump.....	Chicago.....	3.10	2.60	2.60	2.50@ 3.00	
Smokeless screenings.....	Cincinnati...	2.00	1.50	1.60	1.75	1.75@ 2.00	Ind. 4th Vein mine run....	Chicago.....	2.35	2.25	2.25	2.15@ 2.35	
Smokeless mine run.....	Boston.....	5.35	5.40	5.40	5.35	5.35@ 5.50	Ind. 4th Vein screenings...	Chicago.....	1.60	1.60	1.60	1.30@ 1.75	
Clearfield mine run.....	Boston.....	1.90	1.85	1.85	1.75	1.75@ 2.00	Ind. 5th Vein lump.....	Chicago.....	2.35	2.35	2.35	2.25@ 2.50	
Cambria mine run.....	Boston.....	2.10	2.05	2.05	1.90	1.90@ 2.25	Ind. 5th Vein mine run....	Chicago.....	1.95	2.00	2.00	1.90@ 2.10	
Somerset mine run.....	Boston.....	2.00	1.95	1.95	1.85	1.85@ 2.10	Ind. 5th Vein screenings...	Chicago.....	1.20	1.35	1.35	1.20@ 1.50	
Pool 1 (Navy Standard)...	New York...	2.85	2.55	2.55	2.40	2.40@ 2.75	Mt. Olive lump.....	St. Louis.....	2.50	2.35	2.35	2.25@ 2.50	
Pool 1 (Navy Standard)...	Philadelphia...	2.60	2.65	2.65	2.50	2.50@ 2.80	Mt. Olive mine run....	St. Louis.....	2.00	2.15	2.15	2.15	
Pool 1 (Navy Standard)...	Baltimore...	2.30	2.15	2.15	2.15	2.15@ 2.20	Mt. Olive screenings...	St. Louis.....	1.75	1.55	1.55	1.50@ 1.60	
Pool 9 (Super. Low Vol.)...	New York...	2.15	2.05	2.05	1.90	1.90@ 2.25	Standard lump.....	St. Louis.....	2.25	2.25	2.25	2.25	
Pool 9 (Super. Low Vol.)...	Philadelphia...	2.05	2.10	2.10	2.00	2.00@ 2.25	Standard mine run....	St. Louis.....	1.80	1.80	1.80	1.75@ 1.85	
Pool 9 (Super. Low Vol.)...	Baltimore...	2.05	1.85	1.85	1.80	1.80@ 1.90	Standard screenings...	St. Louis.....	1.30	1.35	1.35	1.25@ 1.50	
Pool 10 (H.Gr. Low Vol.)...	New York...	2.00	1.85	1.85	1.75	1.75@ 2.00	West Ky. block.....	Louisville...	2.10	1.80	1.80	1.85@ 2.00	
Pool 10 (H.Gr. Low Vol.)...	Philadelphia...	1.85	1.85	1.85	1.75	1.75@ 2.00	West Ky. mine run....	Louisville...	1.35	1.20	1.20	1.10@ 1.40	
Pool 10 (H.Gr. Low Vol.)...	Baltimore...	1.90	1.80	1.55	1.50	1.50@ 1.60	West Ky. screenings...	Louisville...	.75	.90	.85	.75@ .95	
Pool 11 (Low Vol.).....	New York...	1.80	1.70	1.65	1.55	1.55@ 1.80	West Ky. block.....	Chicago.....	2.30	1.60	1.60	1.50@ 1.75	
Pool 11 (Low Vol.).....	Philadelphia...	1.65	1.55	1.55	1.45	1.45@ 1.70	West Ky. mine run....	Chicago.....	1.25	1.10	1.10	1.00@ 1.25	
Pool 11 (Low Vol.).....	Baltimore...	1.70	1.55	1.55	1.50	1.50@ 1.60							

High-Volatile, Eastern		Market Quoted	Sept. 5, 1925	Aug. 23, 1926	Aug. 30, 1926	Sept. 4, 1926†	South and Southwest		Market Quoted	Sept. 5, 1925	Aug. 23, 1926	Aug. 30, 1926	Sept. 4, 1926†
Pool 54-64 (Gas and St.)...	New York...	1.55	1.40	1.40	1.35	1.35@ 1.50	Big Seam lump.....	Birmingham...	2.25	2.25	2.25	2.00@ 2.50	
Pool 54-64 (Gas and St.)...	Philadelphia...	1.60	1.45	1.45	1.45	1.45@ 1.65	Big Seam mine run....	Birmingham...	1.75	1.85	1.85	1.75@ 2.00	
Pool 54-64 (Gas and St.)...	Baltimore...	1.65	1.55	1.55	1.50	1.50@ 1.60	Big Seam (washed).....	Birmingham...	1.85	2.00	2.00	1.75@ 2.25	
Pittsburgh so'd gas.....	Pittsburgh...	2.50	2.20	2.30	2.25	2.25@ 2.40	S. E. Ky. block.....	Chicago.....	3.00	2.60	2.60	2.50@ 2.75	
Pittsburgh gas mine run...	Pittsburgh...	2.15	1.95	2.10	2.00	2.00@ 2.20	S. E. Ky. mine run....	Chicago.....	1.95	1.75	1.75	1.60@ 1.90	
Pittsburgh mine run (St.)	Pittsburgh...	1.95	1.75	2.00	1.90	1.90@ 2.10	S. E. Ky. block.....	Louisville...	3.00	2.50	2.50	2.50@ 3.00	
Pittsburgh slack (Gas)...	Pittsburgh...	1.55	1.25	1.20	1.20	1.20@ 1.25	S. E. Ky. mine run....	Louisville...	1.60	1.65	1.65	1.50@ 1.85	
Kanawha lump.....	Columbus...	2.60	2.25	2.50	2.25	2.25@ 2.75	S. E. Ky. screenings...	Louisville...	1.25	1.15	1.05	1.10@ 1.25	
Kanawha mine run.....	Columbus...	1.65	1.60	1.60	1.60	1.60@ 1.85	S. E. Ky. block.....	Cincinnati...	3.00	2.35	2.35	2.50@ 2.75	
Kanawha screenings.....	Columbus...	1.30	1.15	1.15	1.10	1.10@ 1.25	S. E. Ky. mine run....	Cincinnati...	1.60	1.65	1.45	1.65@ 1.85	
W. Va. lump.....	Cincinnati...	3.00	2.25	2.35	2.50	2.50@ 3.00	S. E. Ky. screenings...	Cincinnati...	1.20	1.10	1.05	1.25@ 1.40	
W. Va. gas mine run....	Cincinnati...	1.60	1.75	1.75	1.85	1.85	Kansas lump.....	Kansas City...	4.35	4.25	4.35	4.25@ 4.50	
W. Va. steam mine run...	Cincinnati...	1.45	1.55	1.55	1.65	1.65@ 1.75	Kansas mine run....	Kansas City...	3.10	3.00	3.00	3.00	
Hooking lump.....	Columbus...	2.75	2.40	2.40	2.35	2.35@ 2.50	Kansas screenings...	Kansas City...	2.50	2.35	2.35	2.35	
Hooking mine run.....	Columbus...	1.65	1.55	1.55	1.40	1.40@ 1.75							
Hooking screenings.....	Columbus...	1.40	1.20	1.20	1.15	1.15@ 1.25							
Pitts. No. 8 lump.....	Cleveland...	2.50	2.15	2.15	1.80	1.80@ 2.00							
Pitts. No. 8 mine run....	Cleveland...	1.90	1.75	1.75	1.70	1.70@ 1.75							
Pitts. No. 8 screenings...	Cleveland...	1.55	1.35	1.25	1.20	1.20@ 1.25							

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in heavy type, declines in *italics*

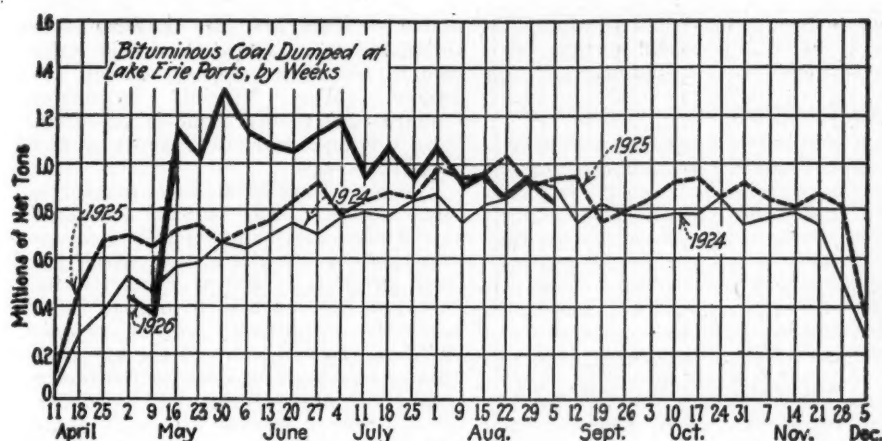
* Gross tons, f.o.b. vessel, Hampton Roads

† Advances over previous week shown in heavy type, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Sept. 5, 1925		August 30, 1926		Sept. 4, 1926†	
			Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34		\$8.20@8.95		\$8.50@9.25		\$8.50@9.25
Broken.....	Philadelphia...	2.39		8.25@8.90	\$9.25	8.50@9.15	\$9.25	8.50@9.15
Egg.....	New York.....	2.34	\$13.00@14.00	8.65@8.90	8.75@9.00	8.75@9.25	8.75@9.10	8.75@9.25
Egg.....	Philadelphia...	2.39	8.90@9.70	8.70@8.95	9.00@9.75	9.00@9.15	9.00@9.75	9.00@9.15
Egg.....	Chicago.....	5.06	8.17@8.60	8.03@8.28	8.14	8.13	8.14	8.13
Stove.....	New York.....	2.34	13.00@14.00	9.15@9.40	9.25@9.50	9.25@9.50	9.25@9.60	9.25@9.50
Stove.....	Philadelphia...	2.39	9.15@10.75	9.15@9.35	9.15@10.20	9.35@9.50	9.15@10.20	9.35@9.50
Stove.....	Chicago.....	5.06	10.00@11.00	8.48@8.80	8.59	8.33@8.58	8.59	8.33@8.58
Chestnut.....	New York.....	2.34	13.00@14.00	8.65@8.95	8.75@9.00	8.75@9.15	8.75@9.10	8.75@9.15
Chestnut.....	Philadelphia...	2.39	9.15@10.15	8.85@8.95	8.50@9.75	9.00@9.15	8.50@9.75	9.00@9.15
Chestnut.....	Chicago.....	5.06	10.00@11.00	8.28@8.50	8.39	8.33@8.53	8.39	8.33@8.53
Pea.....	New York.....	2.22	6.00@7.00	5.00@6.00	6.00@6.50	6.00@6.50	6.00@6.50	6.00@6.50
Pea.....	Philadelphia...	2.14	5.50@5.90	5.00@6.00	6.00@6.75	6.00@6.50	6.00@6.75	6.00@6.50
Pea.....	Chicago.....	4.79	5.25@5.75	5.05@5.36	6.03	6.10	6.03	6.10
Buckwheat No. 1.....	New York.....	2.22	2.60@3.00	2.50	1.75@2.25	3.00@3.50	1.85@2.35	3.00@3.50
Buckwheat No. 1.....	Philadelphia...	2.14	2.50@2.75	2.50	1.85@2.50	2.25@2.75	1.85@2.50	2.25@2.75
Rice.....	New York.....	2.22	2.25@2.50	2.00	1.50@1.85	2.00@2.25	1.50@1.85	2.00@2.25
Rice.....	Philadelphia...	2.14	2.00@2.25	2.00	1.30@2.00	1.75@2.25	1.30@2.00	1.75@2.25
Barley.....	New York.....	2.22	1.80@2.00	1.50	1.25@1.50	1.75@2.25	1.25@1.50	1.75@2.25
Barley.....	Philadelphia...	2.14	1.50@1.75	1.50	1.25@1.75	1.50@1.75	1.25@1.75	1.50@1.75
Birdseye.....	New York.....	2.22	1.80@2.00	1.60	1.25@1.50	2.00	1.25@1.50	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in *italics*.



though the new prices which went into effect the first of the month are 25 to 50c. above quotations written into many of the contracts signed in recent weeks.

Dock Quotations Advanced

The Sept. 1 schedules are as follows: Kentucky screened lump, \$6.75@7.25; stove, \$6.50@6.75; dock-run, \$5.50@5.75; slack, \$4; Elkhorn lump, \$6.25; stove, \$6; Youghiogheny gas screened lump, \$5.50; stove, \$5; Youghiogheny steam lump, \$5.25; stove, \$4.75; dock-run, \$4.50@4.75; screenings, \$3.75@4; splint screened lump, \$5; stove, \$4.75; dock-run, \$4.25@4.50; screenings, \$3.75@4; Hocking screened lump, \$5; stove, \$4.75; dock-run, \$4.50; screenings, \$3.75@4; Pocahontas lump and egg, \$7.50; stove, \$7.25; mine-run, \$5.25; screenings, \$4.25. Anthracite prices are unchanged.

Receipts from the lower lake ports have been falling off. At the same time docks are complaining of congestion because the number of consumers deferring usual buying is growing. Dispatch from the docks, however, has been exceptionally prompt this summer, movement since June showing an increase of over 500 cars when compared with the corresponding period a year ago.

Gradual improvement in demand also is reported from the Twin Cities, and a still heavier volume of business is forecast for this month. Buyers generally seem to realize that the chances of a prolongation of the price war which disrupted conditions earlier in the season have vanished. Some concessions still are made, but they are small in amount and local in character. Milwaukee trade is brisk. Retail prices on Pocahontas were raised another 25c. on Sept. 1. Lake receipts are satisfactory.

Oklahoma Tries Price Stimulus

Oklahoma operators have advanced prices 25@50c. although the demand all summer has been disappointing. Arkansas quotations were not changed the first of the month, but buying in that section has improved. Consumer demand for Arkansas semi-anthracite has reached such proportions that much of the tonnage is being delivered by the retailers direct from the car. The market for Kansas coals is firm. There are some "no bills" in the field, but these are well scattered.

Colorado lump and nut are winning greater interest. Buying in anticipation of September advances was heavy. The new prices, showing an increase of

50c. on domestic coals, put Walsenburg-Canon City lump at \$6; washed nut, \$5; washed chestnut, \$3; Trinidad coking lump and nut, \$3.25; fancy chestnut, \$3; Crested Butte anthracite, \$7.25@9. Rock Springs lump is \$3.75; grate and nut, \$3.50. Steam coals bring \$1.20@1.75. Colorado mines are operating on a 60 per cent basis.

Increased prices on domestic coal, made by Utah operators late in August, have been followed by a slump in demand. Whether this will bring about an acute shortage of slack, such as occurred last May when working time was curtailed to stop the piling up of "no bills" on domestic sizes, remains to

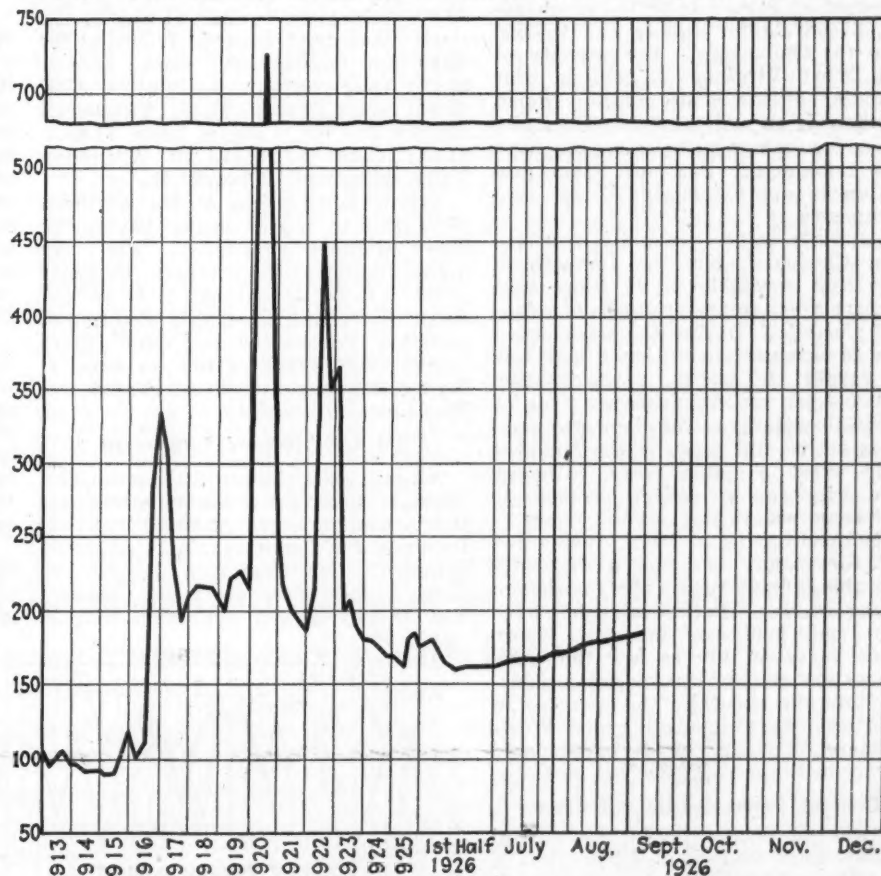
be seen. Operators felt, however, that the demand for prepared coal in recent weeks did not justify the continuance of the price reductions then in effect.

Cincinnati Boom Continues

Smokeless holds the center of the stage at Cincinnati. A circular price of \$4 on lump and egg for September delivery had hardly reached the trade before spot orders were placed at \$4.25@4.50. The minimum on mine-run has advanced to \$2.50, with no assurance that it will halt at that level. Slack, too, has moved upward.

The high-volatile market also is working toward higher levels, although a restraining influence is exercised by some producers who are fighting run-away price tendencies. West Virginia lump readily brings \$2.50@2.75 and up to \$3 has been paid. Hazard is offered at \$2.75 and some Elkhorn is held at \$3.50@4. There is little high-volatile mine-run available under \$1.65 and as high as \$1.85 is obtainable on good gas coal. Slack is less firm. Retail prices have been raised; the advance on smokeless lump is \$1 per ton.

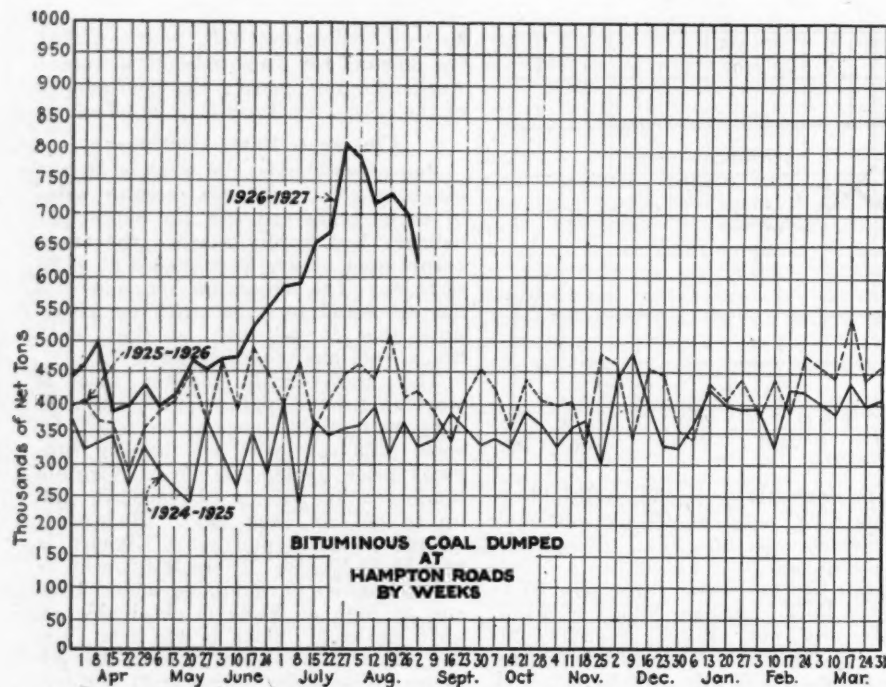
Movement of coal through the Cincinnati gateway increased 446 cars during the week ended last Saturday, but the total loads interchanged—14,714 cars—were 2,200 less than a year ago. Included in the total were 3,120 cars en route to the lakes—a decrease of 328 cars when compared with the pre-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926	1925	1924
Sept. 4	171	168	165
Aug. 30	168	165	164
Aug. 23	165	164	163
Aug. 16	164	163	166
Sept. 7	163	166	166
Sept. 8	166	166	166
Weighted average price	\$2.07	\$2.04	\$2.00
	\$1.99	\$2.21	\$2.01

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.



ceding week. The number of empties sent to the mines also declined.

Stronger Tone to Central Ohio

With tidewater shipments steady and retailers buying more liberally, central Ohio trade is showing considerable strength. Columbus retail prices were increased on Sept. 1 to \$8.75 for smokeless, \$7@7.25 for splints and \$6.25@ \$6.50 for Ohio coals. The scarcity of spot West Virginia is helping Ohio shippers. Steam coals continue quiet, but there is an undercurrent of activity and a few minor price advances have been registered. Southern Ohio production is approximately 20 per cent of capacity.

A slightly better demand is reported from Cleveland, but the tonnage of Ohio coal available is so large that northern Ohio steam prices have weakened about 5c. During the week ended Aug. 28 output from the No. 8 field was the largest in weeks, approximating 241,000 tons, or about 35 per cent of potential capacity. The domestic market is active, but most of the business is in West Virginia coals, although high prices on smokeless promise to shift some orders to the Ohio mines.

The open buying of Pennsylvania gas coal for export has had a distinctly favorable influence upon the Pittsburgh district market. Recent advances have been firmly held, even in slack. These prices, however, are so low that consumers are storing the surplus production brought about by the increase in lump orders. Connellsville and Westmoreland County have participated largely in the export gas coal business.

Central Pennsylvania Advances

Prices on pool coals in the central Pennsylvania field showed increases of 10 to 35c. per ton last week. The sharpest advance was on pool 71, which brought 25 to 35c. more. Pool 1 was \$2.65@2.90; pool 71, \$2.40@2.60; pool 9, \$2.25@2.35; pool 10, \$2@2.15; pool 11, \$1.80@1.85; pool 18, \$1.70@1.75. August shipments were 62,100 cars, as against 60,321 in July and 59,941 cars in August, 1925. Export buying is credited with this gain.

"No improvement in demand" has become the fixed report from Buffalo. Current quotations show medium and low-volatile lump from \$2.85 for Indiana County up to \$4.50 for Pocahontas, with little local buying at the higher end of the range. Low-volatile mine-runs are \$2.10 (Indiana County) to \$2.65 (Maryland) and \$1.75@2 on slack. Fairmont lump is \$1.50@1.65; mine-run, \$1.30@1.40; slack, \$1.10@1.25; Youghiogheny gas lump, \$2.15@2.35; slack, \$1.30@1.45, Pittsburgh district and No. 8 steam lump, \$1.65@1.85; slack, \$1.20@1.30; Allegheny Valley mine-run, \$1.50@1.75.

Skyrocketing prices at the southern piers fail to induce heavy buying by New England consumers, who pay higher figures at the northern tidewater ports. Little, if any coal, is to be had under \$5.35 f.o.b. Hampton Roads and standard Pocahontas and New River brings \$6.60@6.65 gross on cars at Boston and about \$6.50 at Providence. Spot business is quiet.

All-Rail Demand Improving

All-rail coals show a little more life. There is some talk of higher prices, but little actual development along that line. Inquiries for Pennsylvania low-volatile shipments for tidewater delivery to Long Island Sound ports are broadening. West Virginia byproduct coke is

active. Orders are said to have been closed for over 1,500 cars of coke suitable for domestic purposes at \$10 delivered. West Virginia byproduct foundry coke is offered at \$12, Boston. New England domestic coke is steady at \$8.25, ovens.

The New York bituminous market is fairly stable. There is little free coal at the piers and shippers are insisting that they receive the quoted prices for their offerings. Central Pennsylvania operators find much to encourage them in the export outlook. Export demand also has diverted some of the gas coal usually sent to New York to Baltimore and Philadelphia. Hopes of Philadelphia for a stronger market are being realized in everything except prices and even in that respect there is a greater firmness to quotations and some actual increase in the returns from low-sulphur gas coals. Tidewater trade is active.

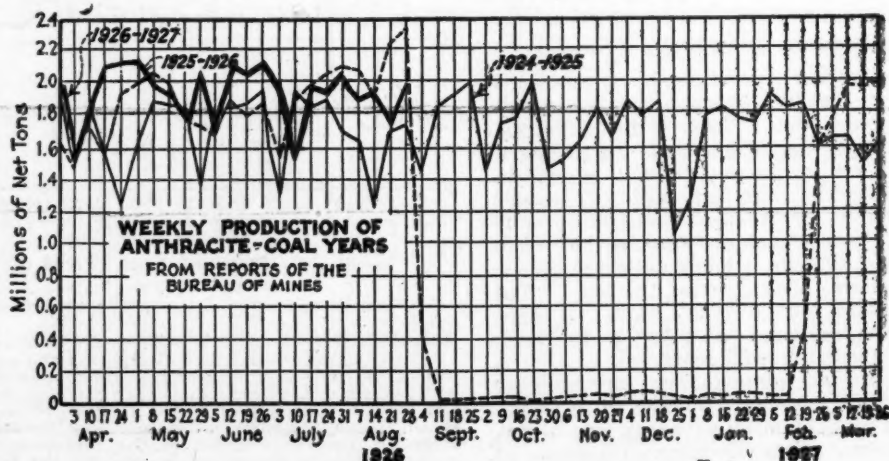
With August figures smashing all export records at Baltimore, it is not surprising that domestic trading attracts little attention. Incomplete data on August loadings indicate that the total foreign movement will pass 700,000 gross tons. Prices for home consumption, however, show no increase and buyers find it an easy matter to place all the spot and contract business they have to offer.

Birmingham Outlook Brighter

Although buying in the Birmingham district is not frantic, the outlook is better than it was a fortnight ago. High-grade steam coals, particularly washed fuel suitable for coke making, is moving more freely. In the spot market, however, individual orders are small. Bunker orders last month were somewhat heavier. Curtailment of contract deliveries of choice domestic coal has left a small surplus for the spot market and this is being absorbed without undue delay. Lower grades drag. The coke market is strong.

Effective Sept. 1 mine prices on medium and high quality fuels were advanced. Cahaba lump is now \$4.50@5; egg, \$4.25@4.75; Black Creek lump, \$4.50@4.75; egg, \$4.25@4.50; Corona lump, \$3.50; egg, \$3.25; Carbon Hill lump, \$2.50@3.25; egg, \$2.25@3; Montevallo seam lump, \$5.25@5.75; egg, \$5@5.50.

Greater firmness in steam sizes featured the New York anthracite market last week. Buckwheat was much more active and marked improvement was



Car Loadings and Supply

	Cars Loaded		Cars	
	All	Coal	All	Coal
Week ended Aug. 21, 1926.....	1,088,791	185,810		
Week ended Aug. 14, 1926.....	1,109,557	193,184		
Week ended Aug. 29, 1926.....	1,124,436	211,683		
Week ended Aug. 22, 1926.....	1,080,107	201,095		
	Surplus Cars	Car Shortages		
	All Coal	All Coal		
	Cars Cars	Cars Cars		
Aug. 22, 1926....	168,884	38,813		
Aug. 14, 1926....	171,269	40,700		
Aug. 14, 1925....	217,190	62,058		

shown in rice and barley. In the domestic division, stove retained the lead in a seasonable market, but egg and chestnut were close seconds. Retailers bought liberally to build up stocks accumulated in anticipation of a brisk consumer demand with the end of the vacation season. Standard domestic prices were unchanged.

Anthracite Steam Trade Stronger

Philadelphia also reported a stronger steam coal demand. Some of the larger companies were able to cut down materially on the tonnage going into storage. Independent producers found a wider market, but these shippers still were compelled to slash prices to place their surplus output. Retail buying expanded with the beginning of the month. As at New York, stove led, with nut a strong second. Pea, too, was in better demand. Householders are taking more interest in the situation.

The Baltimore anthracite trade was without distinguishing feature. Boston demand was sufficient to keep retail equipment busy, but there has been no desire for premium tonnage. Stocks on hand in Massachusetts have been diminishing. On Aug. 1 the quantity in retail storage was 705,871 net tons, against 916,305 tons on the same date in 1925. Deliveries the first four months of the coal year were 11,745 tons less than during the corresponding period in 1925-26.

Buffalo local demand for hard coal is slowly picking up. Lake shipments, on the other hand, are declining. During the week ended Sept. 2 dumpings at Buffalo totaled only 78,200 tons. Nearly half of this tonnage—36,200 tons—cleared for Duluth and Superior. Milwaukee took 14,700 tons; Sheboygan, 8,900 tons; Chicago, 7,300; Green Bay, 6,300, and Manitowoc, 4,800 tons.

August shipments were 380,800 tons, bringing the season's total to Sept. 1 to 1,586,664 tons, compared with 1,366,133 tons last year.

Connellsville Coke Market Quiet

The Connellsville coke market again has settled down into a state of sleepy stability. New inquiries for contract furnace coke have not materialized and spot quotations hold at \$3.10@3.25. Spot foundry hangs at \$4@4.50. Recent sales of raw coal at \$2@2.20 make ovens feel that any reduction in current spot coke prices would be unwarranted. For that reason there is little disposition to push coke production.

During the week ended Aug. 28 coke output in the Connellsville and Lower Connellsville region totaled 130,310 tons, according to the Connellsville *Courier*. Furnace-oven production was 70,000 tons, an increase of 3,100 tons over the preceding week. Merchant-oven output was 60,310 tons, an increase of 350 tons.

Anthracite Circular Prices
For September at New York

(Per Gross Ton f.o.b. Mines)

	Broken	Egg	Stove	Chest-nut	Pea
D.L. & W. Coal Co.	\$8.25	\$8.75	\$9.25	\$8.75	\$6.50
Phila. & Reading					
Coal & Iron Co.	9.15	9.15	9.40	9.15	6.50
Lehigh Valley Coal					
Sales Co.	8.50	9.00	9.35	9.00	6.00
Hudson Coal Co.	9.00	9.00	9.35	9.00	6.00
Lehigh & Wilkes-Barre Coal Co.	8.25	8.75	9.25	8.75	6.00
Lehigh Coal & Nav. Co.	9.25	9.25	9.50	9.10	6.35
M. A. Hanna Co.	9.00	9.25	9.60	9.25	6.50

Prices for buckwheat No. 1 are \$2.50 @ \$3 except on D. L. & W. domestic buckwheat, which is \$3.50; rice, \$2 @ \$2.25, and barley, \$1.50 @ \$1.75.

Class 1 railroads consumed 7,518,789 net tons of coal in June, according to reports to the Interstate Commerce Commission. Total consumption for the first six months of the year was 49,935,063 tons, as compared with 47,404,406 tons during the corresponding period last year.

A fellowship has been established in the Carnegie Institute of Technology under which the Institute and the Bureau of Mines will conduct an economic study of the relative efficiency and costs of timbers treated by different methods and with different preservatives.

Efficiency in Consumption
Saves Railroads Millions

Increased efficiency by the railroads in the use of fuel has resulted in a total saving of \$193,842,000 since 1920. Of this sum \$152,112,000 was saved in freight service, and the remainder in passenger service.

A study of freight performance shows that in 1920 it took an average of 197 pounds of coal to haul 1,000 tons of freight and equipment, exclusive of locomotive and tender, a distance of one mile. In 1925 this same amount of work was accomplished with only 159 pounds of fuel, a saving as compared with 1920 of 19 per cent. The amount of fuel used by Class I roads in recent years to haul 1,000 tons of freight and equipment, exclusive of locomotive and tender, is shown in the following figures: 1920, 197 pounds; 1921, 185 pounds; 1922, 186 pounds; 1923, 183 pounds; 1924, 170 pounds, and 1925, 159 pounds.

In 1925 alone the increased efficiency in the use of fuel resulted in a saving of almost \$53,000,000, as compared with 1920. The 1925 fuel use, compared with 1920, represented a saving of 38 pounds of coal for each 1,000 tons of freight and equipment carried one mile. On the basis of 1925 traffic this increased efficiency in the use of fuel saved 19,446,310 tons of coal. As the average cost of railway coal in 1925 was \$2.72 per ton, this meant a saving of \$52,894,000.

The 1921 fuel use, compared with 1920, represented a saving of twelve pounds of coal for every 1,000 tons of freight and cars carried one mile. On the basis of 1921 traffic this increased efficiency in the use of fuel saved 4,564,296 tons of coal. As the average cost of railway coal in 1921 was \$4.10 per ton this meant a saving of \$18,714,000.

The 1922 fuel use, compared with 1920, represented a saving of eleven pounds of coal for every 1,000 tons. This resulted in total saving of 4,475,576 tons, and, as the average cost of railway coal was \$3.94 in that year, meant a saving of \$17,634,000. In 1923 the saving was 6,911,282 tons at an average cost of \$3.45, or a total cash saving of \$23,844,000. In 1924 the amount of saving was 12,879,972 tons at \$3.03, or \$39,826,000.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports
During Season to End of July

(In Net Tons)

Ports	Railroads	Cargo	1926 Fuel	Total	Cargo	1925 Fuel	Total	Cargo	1924 Fuel	Total
	Hooking Valley.....	4,093,463	119,055	4,212,518	4,140,696	119,047	4,259,743	3,123,137	92,469	3,215,606
	Big Four.....	917,552	6,462	924,014	740,933	3,573	744,506	1,375	46	1,421
Toledo.....	N. Y. C.-Ohio Central Lines.....	1,030,494	52,122	1,082,616	421,025	33,758	454,783	27,095	1,055	28,150
	Baltimore & Ohio.....	1,263,629	36,217	1,299,846	1,535,976	47,939	1,583,915	768,400	25,778	794,178
Sandusky.....	Pennsylvania.....	3,390,981	99,711	3,490,692	2,505,212	75,425	2,580,637	1,299,469	39,916	1,339,385
Huron.....	Wheeling & Lake Erie.....	272,769	14,672	287,441	361,808	16,207	378,015	365,880	17,686	383,566
Lorain.....	Baltimore & Ohio.....	877,641	64,465	942,106	327,343	63,022	390,365	795,192	64,967	860,159
	Pennsylvania.....	189,183	66,017	255,200	117,804	79,779	197,583	642,975	84,111	727,086
Cleveland.....	Erie.....				18,138	1,252	19,390	151,289	5,618	156,907
Fairport.....	Baltimore & Ohio.....	288,267	37,932	326,199	226,608	44,302	270,910	240,717	45,656	286,373
	New York Central.....	110,529	34,347	144,876	144,524	48,296	192,820	467,889	55,317	523,206
Ashtabula.....	Pennsylvania.....	470,849	31,332	502,181	262,413	36,609	299,022	525,338	41,553	566,891
Conneaut.....	Bessemer & Lake Erie.....	831,557	104,628	936,185	570,796	114,060	684,856	834,364	113,034	947,398
Erie.....	Pennsylvania.....	176,335	36,425	212,760	84,613	26,127	110,740	245,541	37,645	283,186
Total		13,913,249	703,385	14,616,634	11,457,889	709,396	12,167,285	9,488,661	624,851	10,113,512
Storage Loading		*60,142	774	60,916	*33,017	1,048	34,065	*182,060	4,940	187,000

*Coal loaded into vessels in December of previous year, after close of navigation and forwarded from Lake Erie ports during year indicated.
Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, Manager

Foreign Market And Export News

French Collieries Still Unable To Meet Fuel Demands

Paris, France, Aug. 18—Superficially, the fuel situation shows little change. French collieries still are unable to fill all the orders tendered them, although there has been no real suffering experienced by consumers.

The quantity of coal exported apparently has been much overestimated. Up to July 1, Great Britain had taken 43,000 metric tons, as compared with a May-June output of approximately 8,600,000 tons. Exports to Belgium have risen from an average of 120,000 tons per month to 127,000 tons in May and 159,000 tons in June. During the same two months, however, France imported 652,000 tons from Belgium.

Following the recent increases in wages in the Nord and Pas-de-Calais fields, prices on industrial coals have been advanced 16@25 fr. over those in effect May 16; briquets are 24 fr. higher than on July 1; ovoids are 34 fr. more than in May and coke prices are up 20@30 fr., when compared with the May basis. Prices on sized domestic coals have been increased 30 fr. since July 1.

Ruhr District Books Orders Ahead for Three Months

Berlin, Germany, Aug. 17 — The volume of business contracted by the Ruhr syndicate since the start of the British strike assures the operators in that district a continuity of an increased output over that of 1913 for at least three months ahead. A number of mine owners have been obliged to employ more men in order to cope with the bigger demand and a further increase in working forces is practically certain.

Another proof of the increased activity can be seen in the amount of coal shipments which were made via Rotterdam last month. Official returns give the number of coal shipments from that port as 675, as against 541 in June. Ten ship loads were consigned to South America, 6 to the United States, 88 to Scandinavian countries, 41 to German ports, 192 to France, 60 to Italy, 201 to Great Britain, and 77 to other countries.

During the first week of August the output of bituminous in the Ruhr district approximated 2,200,000 tons; coke, 404,380 tons; bituminous briquets, 67,214 tons. In the last week of July output was slightly higher, viz., 2,283,349 tons, 405,904 and 70,472 tons, respectively.

In German Upper Silesia production was 1,585,868 tons (in 27 working days) and June output 1,326,690 tons (in 24 working days). The daily output reached 58,736 tons, which is more than has ever been attained before. Home consumption of the district took 386,000 tons; interior Germany, 879,500 tons, and exports, 342,000 tons.

The increased production in Upper

Silesia is due to a more progressive application of mechanical equipment in the mines during the last years. In 1913 the output per man per shift was 1.139 tons, in 1923 it dropped to 0.625 tons, in 1924 it rose to 0.933 tons and last year it amounted to 1.154 tons. During the first half of the current year is was 1.256 tons. The low output of the years 1923 and 1924 is explained by the frequent strikes of those periods.

Belgian Export Restrictions Hit Middlemen

Brussels, Aug. 19—Export restrictions recently announced by the Belgian government are hailed with anything but joy by the coal jobbers. Collieries, because they are permitted to export up to 250,000 tons monthly, are in a less complaining mood.

For the time being, general business wears a holiday air, but this does not check the demand for coal or stop the rapid decrease in the stocks on hand. On July 31, these were estimated at 250,000 metric tons, as against 470,000 tons a month earlier.

The government has authorized the following prices on coals sold for Belgian consumption: Bituminous screened 210 fr.; unscreened, 170@180; three-quarter bituminous screened, 220; unscreened, 195; semi-bituminous screened, 220; unscreened, 175@185; beans, 240; quarter bituminous unscreened, 180; beans, 240; lean anthracite cobbles, 280; beans, 240 fr.

These prices are about 15 to 25 per cent under the prices obtainable for foreign shipment.

The Belgian State Rys. are paying 97@116.36 fr. for coal this month.

Export Clearances, Week Ended Sept. 2

FOR HAMPTON ROADS

For United Kingdom:	Tons
Br. Str. Spenser.....	5,700
Br. Str. Benreach.....	7,605
Grk. Str. Agios Ioannis.....	7,695
Span. Str. Alu Mendi.....	5,250
Fr. Str. Germaine L. D.....	7,159
Br. Str. Misty Law.....	6,700
Br. Str. Ocean Prince.....	7,583
Ital. Str. Cadore.....	8,340
Ital. Str. Aster.....	8,991
Ital. Str. Valrossa.....	6,791
Ital. Str. Giglio.....	4,520
For Ireland:	
Br. Str. Torr Head, for Dublin.....	6,965
For England:	
Br. Str. Pennhill, for Thames.....	4,363
Br. Str. Romera, for Newcastle.....	7,676
For Brazil:	
Br. Str. Stonest, for Santos.....	6,507
Br. Str. Trecherbert, for Santos.....	7,000
Amer. Str. West Calumb, for Rosario	5,288
For Algiers:	
Fr. Str. Joseph Magne, for Oran...	5,935
For Cuba:	
Dan. Str. Nordamerika, for Santa Lucia.....	2,049
For British West Indies:	
Br. Str. Sneland I, for Port of Spain	2,447
For New Brunswick:	
Nor. Str. Marstenen, for St. John..	2,783
For Argentine:	
Br. Str. Melmore, for Puerto La Plata.....	6,524
For Italy:	
Amer. Str. Hog Island, for Genoa..	2,721
For Nova Scotia:	
Br. Str. Fred Cleaves, for Halifax..	2,014

For Jamaica:	
Br. Str. Mayari, for Kingston.....	3,329
For Egypt:	
Br. Str. Diomed, for Port Said.....	1,146

FROM BALTIMORE

For England (to Queenstown, Ireland, for orders):	
Ital. Str. Isabo.....	8,243
Span. Str. Arinda Mendi.....	4,882
Br. Str. Lingfield.....	6,739
Br. Str. Siberian Prince.....	7,763
Dut. Str. Leersum.....	5,203
Br. Str. Anglo Perwian.....	8,832
Ital. Str. Nirvo.....	6,425
Br. Str. Reedpool.....	7,608
Br. Str. Cornthic.....	8,040
Dut. Str. Sirrah, to Birkenhead, for orders.....	5,703
Br. Str. Buckleigh.....	7,784
Br. Str. Seapool.....	6,891
Br. Str. Manchester Commerce.....	7,535
Am. Str. Commercial Pathfinder.....	6,508
Belg. Str. Louvain.....	6,250
Br. Str. Pengreep.....	7,333
Grk. Str. Theodoros.....	7,821
Jap. Str. Washington Maru.....	7,379
For Italy:	
Ital. Str. Ansaldo Secundo, for Genoa	6,742
J.-S. Str. Daksa, for Genoa.....	6,487
Ital. Str. Carmania, for Savona.....	6,982
Ital. Str. Uguaglianza, for Savona.....	6,366
Ital. Str. San Guiseppe, for Venice..	7,163
For Ireland:	
Nor. Str. Songa, for Belfast.....	4,266
Br. Str. Medmenham, for Dublin...	5,415
Br. Str. Euphorbia, for Belfast....	5,011
For Egypt:	
Br. Str. Woodburn, for Alexandria..	5,679
Br. Str. Admiral Hastings, for Port Said.....	4,429
Br. Str. Epsom, for Alexandria.....	6,217
For Wales:	
Br. Str. Lady Astley, for Swansea..	4,911
For Norway:	
Nor. Str. Norefjord, for Oslo.....	4,601
For Cuba:	
Nor. Str. Sydfold, for Havana.....	3,509

FROM PHILADELPHIA

For United Kingdom:	
Gr. Str. Kate.....	—
Swed. Str. Gustavsholm.....	—
Br. Str. Baron Douglas.....	—
Dan. Str. Jungshoved.....	—
Gr. Str. Eftichia Vergottl.....	—
Br. Str. Silksworth.....	—
For Jamaica:	
Br. Str. Maravi, for Kingston.....	—
Nor. Str. Cibao, for Kingston.....	—
Bor. Str. Frednes, for Kingston.....	—
For Cuba:	
Br. Str. Glenpark, for Habana.....	—
For Trinidad:	
Nor. Str. Thorgerd, for Port of Spain.....	—
For Brazil:	
Br. Str. Trevanian, for Rio Janeiro	—
For Italy:	
Ital. Str. Livenza, for Naples.....	—

Hampton Roads Coal Dumpings*

In Gross Tons

	Aug. 26	Sept. 2
N. & W. Piers, Lamberts Pt.: Tons dumped for week.....	234,316	196,401
Virginian Piers, Sewalls Pt.: Tons dumped for week.....	209,767	172,872
C. & O. Piers, Newport News: Tons dumped for week.....	180,175	186,809

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

Piers

	Aug. 28, 1926	Sept. 2, 1926
Pool 1, New York.....	\$5.35@55.60	\$5.35@55.60
Pool 9, New York.....	4.85@ 5.10	4.85@ 5.10
Pool 10, New York.....	4.60@ 4.85	4.60@ 4.85
Pool 11, New York.....	4.35@ 4.50	4.35@ 4.50
Pool 9, Philadelphia.....	4.85@ 5.20	4.85@ 5.20
Pool 10, Philadelphia.....	4.60@ 4.85	4.60@ 4.85
Pool 11, Philadelphia.....	4.30@ 4.55	4.30@ 4.55
Pool 1, Hamp. Roads.....	5.25@ 5.50	5.40@ 5.50
Pool 2, Hamp. Roads.....	5.00@ 5.15	5.30
Pool 3, Hamp. Roads.....	4.60	4.80
Pools 5-6-7, Hamp. Rd.	4.75@ 4.85	5.25

Bunkers

	\$5.60@55.85	\$5.60@55.85
Pool 1, New York.....	5.10@ 5.35	5.10@ 5.35
Pool 10, New York.....	4.85@ 5.10	4.85@ 5.10
Pool 11, New York.....	4.60@ 4.75	4.60@ 4.75
Pool 9, Philadelphia.....	5.10@ 5.35	5.10@ 5.35
Pool 10, Philadelphia.....	4.90@ 5.10	4.90@ 5.10
Pool 11, Philadelphia.....	4.55@ 4.85	4.55@ 4.85
Pool 1, Hamp. Roads.....	5.50	5.50
Pool 2, Hamp. Roads.....	5.15	5.40
Pools 5-6-7, Hamp. Rds.	4.85	5.30

† Advances over previous week shown in heavy type; declines in italics.

Coming Meetings

Pennsylvania Coal Mining Institute of Johnstown, Sept. 17, at Johnstown, Pa. Secretary, Wm. Fleming, Johnstown, Pa.

Joint convention of the Western Division of the American Mining Congress, American Institute of Mining and Metallurgical Engineers, American Association of Petroleum Geologists and American Silver Producers' Association at Denver, Colo., Sept. 20-24.

American Institute of Mining and Metallurgical Engineers. Oct. 6-9, at Pittsburgh, Pa. Secretary, H. Foster Bain, 29 West 39th St., New York City.

National Safety Council. Oct. 25-29, at Detroit, Mich. Managing director, W. H. Cameron, 108 East Ohio St., Chicago, Ill.

National Conference of Business Paper Editors. Annual convention at Hotel Astor, New York City, Nov. 8-10. Secretary, D. G. Woolf, 334 Fourth Ave., New York City.

National Industrial Traffic League. Commodore Hotel, New York City, Nov. 17 and 18. Executive secretary, J. W. Beek, Chicago, Ill.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

New Companies

A charter has been issued to the Snider Coal Co. of Grafton, W. Va. The capital stock is \$50,000 and the incorporators are John W. Snider, Beulah Snider, John Barlow, A. H. Grim and Dewey Grim, all of Grafton. The company is organized to buy and sell coal land and mine coal.

The Southern Ohio Fuel Co., of Cleveland, has been incorporated with a capital of 500 shares of stock, no par value designated, to operate mines and lease and deal in coal lands. The incorporators are Robert Cohn, Charles E. Moore, Alfred L. Gordon, P. D. Harvey and Louis Ohlinger.

The Hawesville Coal Co., Hawesville, Ky., with a capital of \$10,000, has been incorporated by Floyd J. Laswell and F. J. Alsop.

Home Service Coal Co., Jacobs Building, Fairmont, W. Va., has been incorporated for \$60,000 by W. A. Lawler, John W. Fleming, Nora Pack Eddy, J. O. Whorley and Emma E. Fleming, all of Fairmont, to lease, buy and sell coal land and mine coal.

Raleigh Co., Beckley, W. Va., has been incorporated for \$25,000 to acquire and sell coal land and to mine coal. The incorporators are: J. B. Clifton, Thomas H. Wickham, W. W. Goldsmith, L. L. Scherer and Ashton Filre, all of Beckley.

The Idaho Coal Mining Co., of Driggs, Ida., has been incorporated for \$100,000 by John R. Cluff, John F. B. H. and A. D. Miller, Jr., and A. B. Gee.

New Equipment

Can Repair Refractory Brick Continuously

Plibrico Stucco is a new refractory recently placed on the market by the Plibrico Jointless Firebrick Co., of 1130 Clay St., Chicago. It is intended for the maintenance of brick or monolithic furnace walls and arches, and may be applied to either a wall or arch as often as the boiler comes off the line, replacing any portions of the furnace lining that have been eaten away or have fallen during the last service period.

This material is normally applied in thin coats with a trowel. Several coats may be necessary, for if any coat is too thick it will not adhere to the furnace wall. Under practical tests it is claimed that this material has given twelve months of maintenance on a 500-hp. boiler operated continuously at 185 per cent of rating. Previous to the application of this stucco a life of more than 14 weeks was rare.

Turbine Designed for Low or High Pressure

A steam turbine which can be used with relatively low steam pressure and temperature in the present station, but which with slight changes can be used with steam of high pressure and temperature when the station is modernized, is being built for the Trinidad Electric Transmission, Railway & Gas Co., of Trinidad, Colo., which supplies power to many mines in the southern Colorado fields around Walsenburg and Trinidad.

The Trinidad plant has already a 5,000-kw. steam-turbine generator set; the Walsenburg plant is at present of smaller capacity. The power demand made it necessary to add to the equipment of the Walsenburg station, which is an old plant with low steam pressure and superheat. The company is looking forward to the day when it will put in new boilers, raising the steam pressure and temperature to a point which will give the economy of a modern plant. Inquiry was therefore made for a machine which could be used at present on 165-lb. steam pressure and 100-deg. superheat, and which with minimum modification can at a later date be used on a pressure of 350 lb. or more and a total steam temperature of 700 deg. F.

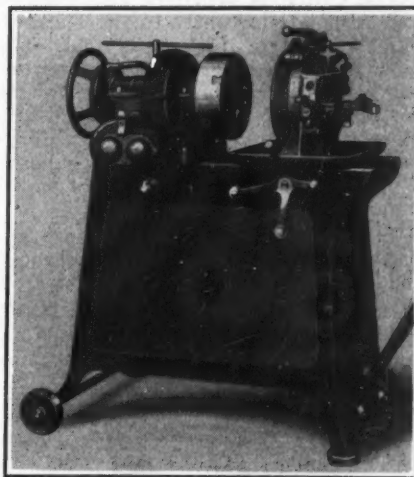
A 6,000-kw. steam turbine meeting these specifications was designed by the engineers at the Lynn works of the General Electric Co., and is now being built there. The unit is laid out with all high-pressure parts suitable for the maximum steam temperature and pressure, and provision is made for eventually mounting fourteen wheels; but as first installed for the lower steam pressure it will have nine wheels,

and the first-stage nozzle and buckets will be suitable for the lower pressure. The five wheels originally omitted, together with high pressure nozzles, will be shipped with the turbine.

When the plant is rebuilt for 350-lb. steam pressure it will merely be necessary to place the extra five wheels and high-pressure nozzles in the turbine. In this way the Trinidad company will secure the benefits of maximum economy of operation under both present and future steam conditions. In line with modern practice, the turbine will be arranged for steam extraction at two pressures for feed-water heating.

Threads Both Pipe and Bolts

In the accompanying illustration is shown a portable pipe-threading machine which forms a recent development of Hall-Will, Inc., of Erie, Pa. It is designed for threading pipe of sizes ranging from $\frac{1}{2}$ to 2-in. and bolts from $\frac{1}{2}$ to $1\frac{1}{2}$ -in. It may also be used as a power unit for driving hand stocks up to 12-in. in size by the aid of a universal shaft. This machine is designed primarily as a portable unit, but may be installed permanently. The rear feet are mounted on small wheels, and the front ones are provided with double-swivel castors which raise the front of



Built To Be Portable But May Be Permanently Installed

This combined pipe-and-bolt threader is so constructed that it may be readily moved about the shop or it may be permanently installed in any desired location. It readily cuts either pipe or bolt threads and even close nipples may be made by the regular equipment.

the machine when the handle is depressed. This pipe threader is driven through a silent chain from a 1-hp. reversible motor bolted to the main frame. A friction clutch operated by a hand lever starts and stops the threading device. Three speeds are provided, these being changed through a selective slide system with a neutral position between shafts.

Opening and closure of the die head is accomplished by a lever handle conveniently located. Close nipples may be threaded without extra equipment, the standard chuck being adaptable for this work. Adjustments may also be made for oversize and undersize threading.

Oil used in cutting as well as the chips return to a drip pan at the front of the machine, where the oil drains off to a reservoir below. This lubricant is supplied to the cutting tool and die head by a geared rotary pump driven directly from the motor shaft. Four sets of chasers covering the complete range of the machine, one set of cutting-off tools and an extra set of dies in sizes from $\frac{1}{2}$ to 2-in. form the standard equipment of this pipe threader.

Sensitive Power Hammer Has Great Forging Capacity

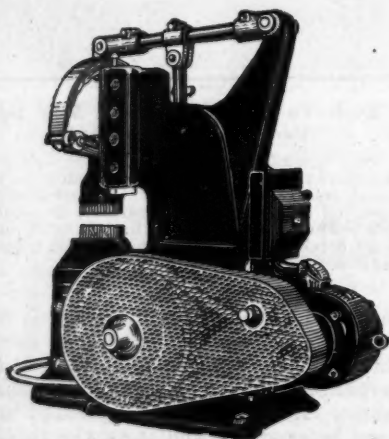
A neat and compact power hammer is being made by the Central Machine Works, of Minneapolis, Minn. It takes up little space, its floor dimensions being 3 ft. x 4 ft. 2 in., and it is only 5 ft. high. Though the weight of its ram is 100 lb., it requires approximately only 2½ hp. to operate it at its maximum speed of 230 r.p.m.

Power is transmitted through a sensitive control by a positive friction clutch mounted in the solid-web drive pulley. Through the foot pedal extending around the hammer the operator controls the clutch, making it easy for him to provide any kind of a blow he desires, according to the manufacturers.

The clutch is sensitive and positive and responds instantly to the slightest touch of the foot, so that any blow from a gentle tap to the heaviest can be had instantly at any part of the forging. This positive control of the blow makes it possible to easily forge anything from a small pin to a heavy 4-in. or even 5-in. billet. There is also ample space to weld a 3-ft. tire.

Lubrication of the crank shaft and pulley bearings is provided for through the hollow crank shaft with oil fed from ample reservoirs on both sides of the hammer.

The head of the hammer is suspended



Gives Kind of Blow Desired

Provision is made for rapid adjustment at the end of the connecting rod so that the ram can be quickly raised or lowered to change the distance between the dies.

from a six-leaf steel spring by ten plys of leather, giving it a quiet and elastic travel and increasing its capacity. For small forgings on which light blows are used the travel of the head affects the spring but little. For heavier material a longer travel of the ram and a snapper punch are desired. In making such blows the steel spring is contracted until the ram reaches its maximum height of travel. At that point there is much tension on the spring and as the latter expands it snaps the head downward with a terrific blow. As the hammer strikes, the resiliency of the mounting gives the head a quick elastic rebound.

The forging capacity of the hammer is greatly increased by its quick adjustment features, so that the proper blow can be secured for the smallest as well as largest piece. A milled pinion is mounted within easy reach at the top of the connecting rod, by means of which the ram is quickly raised or lowered to change the distance between the dies. The stroke of the ram is also just as quickly changed.

The hammer can be furnished in either belt or direct-connected motor drive. On the latter, the motor and safety switch are both mounted on the rear of the hammer with an approved safety guard covering the belt and pulleys.

Recent Patents

Coal Cutter; 1,582,949. Charles E. Waxbom, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio. May 4, 1926. Filed Dec. 26, 1923; serial No. 682,726.

Coal Drill; 1,582,990. N. D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio. May 4, 1926. Filed April 19, 1921; serial No. 462,727.

Coal-Chute Gate; 1,583,031. Edwin A. Titus, Moline, Ill. May 4, 1926. Filed March 12, 1925; serial No. 14,910.

Loading Machine; 1,583,572. Isadore Burton, Pittsburgh, Pa. May 4, 1926. Filed Feb. 26, 1925; serial No. 11,825.

Coal Loading Machine; 1,585,694. Frederick L. Schoew, Huntington, W. Va. May 25, 1926. Filed Jan. 6, 1925; serial No. 840.

Apparatus for Washing Coke Breeze; 1,585,720. Arthur L. Jennings, Cleckheaton, England. May 25, 1926. Filed Aug. 12, 1924; serial No. 731,605.

Cutter Bar; 1,585,916. Morris P. Holmes, Claremont, N. H., assignor to Sullivan Machinery Co., Chicago, Ill. May 25, 1926. Filed Oct. 19, 1921; serial No. 508,791.

Cutter Chain; 1,586,021. John W. Zellers, Chicago, Ill., assignor to Goodman Mfg. Co., Chicago, Ill. May 25, 1926. Filed June 18, 1924; serial No. 720,733.

Bit or Cutting Tool; 1,586,151. Louis F. Hess, Ansted, W. Va., assignor to Daniel Boone Mining Machine Co., of West Virginia. May 25, 1926. Filed May 8, 1922; serial No. 559,302.

Shoveling Machine; 1,587,396. Arthur J. Mason, Chicago, Ill. June 1, 1926. Filed Oct. 25, 1922; serial No. 596,758.

Trade Literature

Air Lift Pumping. Sullivan Machinery Co., Chicago, Ill. Bulletin 71-1. Pp. 47; 6x9 in.; illustrated. Typical air-lift pumping installations in municipal, railway and industrial service are illustrated and described.

Keystone Lubricating Co., Philadelphia, Pa., has issued a 48-pp. 5½x8½-in. book containing questions frequently asked concerning their safety lubricating system, together with the answers thereto. The book is well illustrated.

"U. S." Cables for Mining Machines. United States Rubber Co., New York City. Four-page folder, illustrating and describing gathering locomotive cables, parallel mining-machine cables and concentric mining machine cables.

Baby Conoidal Fans. Buffalo Forge Co., Buffalo, N. Y. Catalog No. 475. Pp. 12; 8½x11 in.; illustrated. Gives constructional details and ratings with the Niagara, Duplex and Turbo wheels.

Buffalo Electric Blowers. Buffalo Forge Co., Buffalo, N. Y. Four-page folder illustrating and describing type "FB" variable and constant speed blowers.

Distribution and Small Power Transformers. General Electric Co., Schenectady, N. Y. GEA-424. Pp. 72; 8x10½ in.; illustrated. Covers in detail important features of the design, manufacture and operating characteristics of small and moderate size transformers for lighting and distribution service.

The Dorr Co., New York City, has recently issued a bulletin on **Sanitary Engineering**. It has 16 pp., 7½x10½ in., illustrated. Discusses the application of Dorr equipment to sanitary engineering problems, such as the treatment of municipal sewage, purification and softening of water supplies and treatment of industrial waste waters.

Multi-Stage Centrifugal Pumps. Warren Steam Pump Co., Inc., Warren, Mass. Bulletin 203. Pp. 7; 8½x10½ in.; illustrated. Describes the Warren four-stage, three-stage and two-stage balanced type centrifugal pumps.

Ohio Brass Co., Mansfield, Ohio, has issued its 1926-7 Catalog No. 20, covering its high tension insulators, trolley line materials, rail bonds and tools, third rail insulators, car equipment specialties and brass valves. The book has 945 pp., is 6x9 in., illustrated. It has a classified index and is also thumb-indexed for ready reference to the different subjects.

The Hill Clutch Machine & Foundry Co., Cleveland, Ohio, has recently issued Catalog No. 26, printed in three sections, A, B and C. Section 26-A illustrates and describes a new **Flexible Coupling** of unique simplicity, flanged and compression coupling, shafting and bearings; section 26-B covers the application of the patented **"Smith Type"** Hill Clutch Pulleys and **Cut-Off Couplings**, including quill drives; section 26-C illustrates both American and English systems of rope drives. Agitator designs, parts and gearing, gears, speed transformers and other engineering data of value to engineers, master mechanics, plant superintendents and purchasing agents. The book has 258 pp. and is well illustrated.